ASIIN Seal

Accreditation Report

Bachelor's Degree Programmes
Biology
Genetics

Master's Degree Programmes
Biology
Biology (pedagogical training)
Neuroscience

PhD programme
Neuroscience

Provided by
Al-Farabi Kazakh National University, Almaty

Version: 23 June 2023

Table of Content

A About the Accreditation Process 3

B Characteristics of the Degree Programmes 5

C Peer Report for the ASIIN Seal 8

1. The Degree Programme: Concept, content & implementation 8
2. Exams: System, concept and organisation 25
3. Resources 28
4. Transparency and documentation 34
5. Quality management: quality assessment and development 37

D Additional Criteria for Structured Doctoral Programmes 40

E Additional Documents 45

F Comment of the Higher Education Institution (31.05.2023) 46

G Summary: Peer recommendations (05.06.2023) 51

H Comment of the Technical Committees (13.06.2023) 53

Technical Committee 10 – Life Sciences (12.06.2023) 53
Technical Committee 14 – Medicine (13.06.2023) 54

I Decision of the Accreditation Commission (23.06.2023) 55

Appendix: Programme Learning Outcomes and Curricula 57

A About the Accreditation Process

Name of the degree programme (in original language)	**(Official) English translation of the name**	**Labels applied for** [1]	**Previous accreditation (issuing agency, validity)**	**Involved Technical Committees (TC)**[2]
Биология	Bachelor in Biology	ASIIN	ASIIN, 31.03.2017 – 30.09.2023	10
Биология	Master in Biology	ASIIN	ASIIN, 31.03.2017 – 30.09.2023	10
Биология (педагогическая подготовка)	Master in Biology (pedagogical training)	ASIIN	ASIIN, 31.03.2017 – 30.09.2023	10
Генетика	Bachelor in Genetics	ASIIN	-	10, 14
Нейронаука	Master in Neuroscience	ASIIN	-	10, 14
Нейронаука	PhD Neuroscience	ASIIN	-	10, 14
Date of the contract: 13.10.2022 **Submission of the final version of the self-assessment report:** 04.01.2023 **Date of the audit (online):** 10.05. – 11.05.2023				
Peer panel: Prof. Dr. Hanspeter Mallot, University Tübingen Prof. Dr. Valentin Stein, University Bonn Prof. Dr. Vlada Urlacher, University Düsseldorf Dr. Abeldenov Sailau, National Center for Biotechnology, Astana				

[1] ASIIN Seal for degree programmes;
[2] TC: Technical Committee for the following subject areas: TC 10 – Life Sciences

Aizhamal Aitzhanova, L.N. Gumilyov Eurasian National University, student	
Representative of the ASIIN headquarter: Rainer Arnold	
Responsible decision-making committee: Accreditation Commission	
Criteria used: European Standards and Guidelines as of 15.05.2015 ASIIN General Criteria as of 28.03.2014 Subject-Specific Criteria of Technical Committee 10 – Life Sciences as of 28.06.2019	

B Characteristics of the Degree Programmes

a) Name	Final degree (original)	b) Areas of Specialization	c) Corresponding level of the EQF[3]	d) Mode of Study	e) Double / Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Bachelor Biology	Бакалавр естественных наук по специальности Биология / Bachelor of Natural Science in Biology	-	6	Full-time	-	4 years	240 ECTS	once a year (autumn), 2010
Master Biology	Магистр естественных наук по специальности Биология / Master of Natural Science in Biology	-	7	Full-time	-	2 years	120 ECTS	twice a year (autumn, spring), 2010
Master Biology (pedagogical training)	Магистр педагогических наук по специальности Биология / Master of Pedagogical Sciences in Biology	-	7	Full-time	-	2 years	120 ECTS	twice a year (autumn, spring), 2010
Bachelor Genetics	Бакалавр естествознания по образовательной программе / Bachelor of Natural Science in Genetics	-	6	Full-time	-	4 years	240 ECTS	once a year (autumn), 2019
Master Neuroscience	Магистр естественных наук по образовательной программе / Master of Natural Sciences in Neuroscience	-	7	Full-time	-	2 years	120 ECTS	twice a year (autumn, spring), 2021
PhD Neuroscience	Доктор философии (PhD) по образовательной программе / Doctor of Philosophy (PhD) in Neuroscience	-	8	Full-time	-	3 years	180 ECTS	twice a year (autumn, spring), 2021

[3] EQF = The European Qualifications Framework for lifelong learning

For the Bachelor's degree programme Biology, Al-Farabi Kazakh National University (KazNU) has presented the following profile in the Self-Assessment Report:

"The programme is aimed at the formation of a Bachelor of natural Sciences with practical skills and competencies in the field of biology, able to work in research, environmental protection, sanitary-epidemiological and other institutions."

For the Master's degree programme Biology, Al-Farabi Kazakh National University (KazNU) has presented the following profile in the Self-Assessment Report:

"The programme is aimed at training highly qualified biologists with professional and personal competencies, research and analytical skills, fundamental knowledge in the field of general biology, ecology, biomedicine, biotechnology, which will allow them to effectively implement and apply their knowledge and skills in research, environmental protection, medical, sanitary and epidemiological, agricultural, educational institutions and manufacturing enterprises."

For the Master's degree programme Biology (pedagogical training), Al-Farabi Kazakh National University (KazNU) has presented the following profile in the Self-Assessment Report:

"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 to work as a teacher in the educational field and a researcher in educational and scientific centers."

For the Bachelor's degree programme Genetics, Al-Farabi Kazakh National University (KazNU) has presented the following profile in the Self-Assessment Report:

"The programme is aimed at training a competitive expert possessing theoretical knowledge in the field of general and molecular genetics and practical skills in conducting genetic research in the field and laboratory conditions; able to accomplish practical tasks in fields of biology, biomedicine, biotechnology, ecology, forensic studies, preservation of germplasm and other areas of professional activity which require the knowledge and skills of the expert in genetics."

For the Master's degree programme Neuroscience, Al-Farabi Kazakh National University (KazNU) has presented the following profile in the Self-Assessment Report:

"To train specialists of masters in the field of neuroscience with professional competencies that meet the requirements of employers carrying out professional activities based on modern methodological approaches of neuroscience, aimed at solving theoretical and applied problems to identify patterns of functioning of the nervous system, the development and implementation of innovative neurotechnologies in the scientific, socio-economic, medical, educational spheres of society capable of consolidating the world scientific and practical experience in neuroscience guided by moral and ethical norms and principles in professional activity."

For the PhD programme Neuroscience, Al-Farabi Kazakh National University (KazNU) has presented the following profile in the Self-Assessment Report:

"To train highly qualified, competitive scientific personnel on the international labor market in the field of neuroscience, possessing universal and subject-specialized competencies that meet the demands of the global labor market, carrying out research, practical, expert-analytical activities in integrative neuroscience, development and safety of neurotechnologies in the fields of science, economics, health care, state security and education based on the modern methodology of an interdisciplinary approach; capable of organizing original research, making a significant contribution to the development of the world neuroscience, integrating into the international scientific community bearing moral and ethical responsibility for scientific research, contributing to technological progress and socio-cultural development of society."

C Peer Report for the ASIIN Seal

1. The Degree Programme: Concept, content & implementation

Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Homepage Faculty of Biology and Biotechnology: https://www.kaznu.kz/en/351/page/%20Departments/Faculty_of_Biology_and_Biotechnology
- Homepage Ba Biology: https://www.kaznu.kz/en/24945/page/
- Homepage Ma Biology: https://www.kaznu.kz/en/24937/page/
- Homepage Ma Biology (ped): https://www.kaznu.kz/en/25196/page/
- Homepage Ba Genetics: https://www.kaznu.kz/en/24908/page/
- Homepage Ma Neuroscience: https://www.kaznu.kz/en/25198/page/
- Homepage PhD Neuroscience Biology: https://www.kaznu.kz/en/25199/page/
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The peers base their assessment of the learning outcomes on the information provided in the module descriptions and in the Self-Assessment Report of all six degree programmes under review. For all programmes, Al-Farabi Kazakh National University (KazNU) has described Intended Learning Outcomes (ILO), which cover a number of specific competences students should acquire in their respective degree programme. The ILO of each degree programme are published on the programme's website.

The peers refer to the Subject-Specific Criteria (SSC) of the Technical Committee 10 - Life Sciences as a basis for judging whether the intended learning outcomes of the Bachelor's degree programmes Biology, the Master's degree programme Biology, and the Master's

degree programme Biology (pedagogical training) as defined by KazNU correspond with the competences as outlined by the SSC. They come to the following conclusions:

Graduates of the Bachelor's degree programme Biology should understand the basic biological processes and should be capable of applying the scientific and technological methods of the biological sciences. In addition, graduates should acquire relevant scientific knowledge in the different biological areas such as botany, zoology, biophysics, biodiversity, molecular biology, cell biology, ecology, plant & animal physiology, and related natural sciences. They learn to work in a team and to carry out practical work in a laboratory and in the field. In addition, graduates should be able to work scientifically and be familiar with technological innovations and the use and preservation of biological resources.

Supplementing the subject-related qualification objectives, Bachelor's students should have adequate competences in oral and written communication skills, be capable of working autonomously as well as in a team-oriented manner, and be able to conduct research activities. Furthermore, they should have trained their analytical and logical abilities, be able to apply information and communication technology, and show a social and academic attitude. Finally, students should acquire language skills and should develop a strategy for life-long learning.

The programme's educational objectives and learning outcomes are expected to equip the graduates with life skills required to develop and adapt to the wide spectrum of possible occupations. Biology graduates have manifold job opportunities, which includes research assistants, teachers/lecturers, environmental consultants and they can find a suitable occupation in companies, academia, or public institutions.

Throughout the Faculty of Biology and Biotechnology, a total of 906 students graduated in 2022, 44.5% (404) of them entered a Master's programme at KazNU, 32% (289) enrolled in other universities in Kazakhstan, and 0.6% (5) students entered in foreign universities (Germany, Turkey, Poland). The rest entered the job market directly.

As described in the Self-Assessment Report, graduates of the Master's degree programme Biology should able to work scientifically and be able to understand and solve complex problems in the area of biology. To this end, they should be in a position to discuss complex life science issues as well as own research results comprehensively and in the context of current international research and present these in writing. More specifically they should be able to identify, validate, analyse, and manage biological data and be familiar with biological specimens. In addition, students of the Master's degree programme Biology should acquire social competences, such as abstraction ability, analytical thinking, capacity for teamwork, ability to communicate, international and intercultural experience, and are therefore especially prepared to take on leadership responsibilities.

Graduates of the Master's degree programme Biology have manifold job perspectives, for example, they can work as biological curators at public and private institutions, as conservation manager for plantations or other agricultural companies, as environmental managers at public or non-governmental organisations, as researcher at public and private institutions, or as teachers at universities.

The goal of the Master's degree programme Biology (pedagogical education) is to impart the necessary professional skills (pedagogic, personal, and social) in biology, which are needed to become a successful teacher, education manager, or researcher. To this end, graduates should master advanced theoretical principles in biology and be able to plan and conduct advanced biological experiments. In addition, they should understand the field of biology education in theory and practice, to develop and apply biology teaching techniques and methods, and to analyse education management policies and curricula. Finally, they should be able to design and carry out complex research activities in the area of biology education, and be able to take over leadership functions in the education sector.

The peers gain the impression that the graduates of all three biology programmes under review are well prepared for entering the labour market and can find adequate jobs in Kazakhstan.

The Bachelor's degree programme Genetics is designed to prepare students for careers or advanced studies, which involve the application of fundamental genetics and genomics to all areas of biology, biomedical sciences, and biotechnology. Students should develop knowledge and skills in the theory of genetics, the origin and development of organisms, genetic pathologies, population genetics, and evolution. To this end, should learn to apply genetic principles and different methods of genetic analysis, to explain how genetic principles and experimentation can be used to understand the biology of diverse organisms at different levels, and understand the relationship between genetics and other disciplines in biology. Additionally, graduates should be able to apply appropriate methods in genetics to solve problems in biology, to demonstrate scientific reasoning, problem solving, and research skills, and to analyse and interpret data derived from direct experimentation and from the literature relevant to topics in genetics. The acquired competences can be used in broad careers in science, including conservation, teaching, forensics, publishing, genetic counselling and research and in careers beyond the field of science.

The Master's degree programme Neuroscience has the goal to deepen and expand the fundamental knowledge and skills acquired in a previous Bachelor's programme (biology, biomedicine, biochemistry, molecular medicine, psychology). The goal is to educate graduates that are able to work independently in accordance with scientific methods and are prepared for professional practice as neuroscientists. To this end, graduates should have a

high-level understanding of the major neurological activities and their application to neurological disease, have a sound overview of science advances across the neuroscience field, and a good understanding of clinical synergies. Additionally, they should have gained insights into current research applications of these techniques across the various neuroscience disciplines and be able to apply this knowledge through conducting a research project. Finally, they should be able to work in teams and effectively communicate research findings. The programme furnishes students with a professional qualification that empowers them for many areas of activity in specialist institutions and the private sector, for example in research, healthcare, education, and training.

PhD students in Neuroscience should demonstrate a high level of broad applications of scientific methods to many areas of neuroscience and be able to develop innovative strategies to investigate neuroscience research questions to solve particular neurological problems. Moreover, they should gain competencies with programming and modelling of neural networks, algorithmisation and development of machine learning at the intersection of biological, psychophysiological, and psychological patterns and functions of the human brain. At the same time, the graduates should be able to conduct independent research in areas such as the study of the connection between consciousness and the brain, brain-computer interface, as well as diagnostics and prognostic markers of development in normal and pathological conditions. Finally, they should achieve a high level of competency enabling them to design and conduct high quality neuroscience research projects and demonstrate the knowledge, research expertise, and methodology to become proficient researchers in the area of neuroscience.

In summary, the peers are convinced that the intended qualification profiles of all programmes under review allow graduates to take up an occupation, which corresponds to their qualification. The degree programmes are designed in such a way that they meet the goals set for them. The objectives and intended learning outcomes of all degree programmes under review are reasonable and well founded.

The peers conclude that the objectives and intended learning outcomes of the Bachelor's degree programmes Biology, the Master's degree programme Biology, and the Master's degree programme Biology (pedagogical education) adequately reflect the intended level of academic qualification (EQF 6 for Ba Biology and EQF 7 for Ma Biology and Ma Biology (ped) and correspond sufficiently with the ASIIN Subject-Specific-Criteria (SSC) of the Technical Committee 10 – Life Sciences.

In a similar way, the objectives and intended learning outcomes of the Bachelor's degree programmes Genetics, the Master's degree programme Neuroscience, and the PhD programme Neuroscience comply with the intended academic qualification (EQF 6 for Ba Genetics, EQF 7 for Ma Neuroscience and EQF 8 for PhD Neuroscience).

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report

Preliminary assessment and analysis of the peers:
The peers confirm that the English translation and the original Kazakh names of all degree programmes under review correspond with the intended aims and learning outcomes of the respective degree programme.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Regulation on academic mobility of KazNU of May 23, 2022.
- Homepage Faculty of Biology and Biotechnology: https://www.kaznu.kz/en/351/page/%20Departments/Faculty_of_Biology_and_Biotechnology
- Homepage Ba Biology: https://www.kaznu.kz/en/24945/page/
- Homepage Ma Biology: https://www.kaznu.kz/en/24937/page/
- Homepage Ma Biology (ped): https://www.kaznu.kz/en/25196/page/
- Homepage Ba Genetics: https://www.kaznu.kz/en/24908/page/
- Homepage Ma Neuroscience: https://www.kaznu.kz/en/25198/page/
- Homepage PhD Neuroscience Biology: https://www.kaznu.kz/en/25199/page/
- Discussions during the audit

Preliminary assessment and analysis of the peers:
All programmes under review are offered by the Faculty of Biology and Biotechnology of KazNU. Each semester is equivalent to 15 weeks of learning activities. Besides these learning activities, there is usually one week for midterm exams and two weeks for final exams.

The Bachelor's degree programme Biology is designed for four years with 240 ECTS points and is offered as a full-time programme. The curriculum includes General Education Disciplines (GED) with 56 ECTS points, Core Disciplines (CD) with 112 ECTS points, Major Disciplines (MD) with 60 ECTS, and the "Final Attestation" with 12 ECTS credits. All areas, besides the "Final Attestation" include compulsory courses as well as electives. In total, students can choose electives, which encompass 47 ECTS points, which is a lot for a Bachelor's degree programme. The offer of elective disciplines ensures that students can build an individual learning trajectory and specialise in a specific field of biology. Lectures account for 43 %, professional practice for 15%, and laboratory work for 42% of all classes.

The General Education Disciplines are not subject-specific and include courses such as "Modern History of Kazakhstan", "Philosophy", "Information and Communication Technologies", "Foreign Language", and "Physical Training". These courses are usually offered in the first semesters of the Bachelor's programme and all bachelor's students at KazNU (and all other Kazakh universities) have to take them – irrespective of their concrete study programmes.

The Core Disciplines cover the major areas of biology and related natural sciences and include courses such as "Zoology", "Biochemistry", "Plant Anatomy and Morphology", "Cell Biology and Histology", "Microscopic Technique and Human and Animal Anatomy", "Vertebrate Zoology and Higher Plants", "Biostatistics", "Molecular Biology", and "Biophysics".

The Major Disciplines are more advanced courses, which are offered from the fifth semester. They include courses such as "Genetics", "Human and Animal Physiology", "Chronobiology, Neurophysiology and Immunology", and "Bioresources of Kazakhstan".

The inclusion of the course "Methods of scientific research" in the curriculum implies the ability to set a research problem, solve it experimentally, and apply appropriate mathematical methods of analysis

For the "Final Attestation" 12 ECTS points are awarded. It is carried out in the form of writing and defending a thesis (project) or preparing and passing a comprehensive exam.

The Master's degree programmes Biology and Biology (pedagogical education) are both designed for two years with 120 ECTS points and offered as a full-time programmes. The curricula of both Master's degree programmes include lectures, during which the students

are explained the main provisions, concepts and the essence of the phenomena and processes being studied are consistently considered) and seminars, in which undergraduates discuss the being studied material, analyze and solve relevant problems.

The structure of both Master's programmes is as follows:

- Core Disciplines (35 ECTS points), which consist of university components (20 ECTS points) and electives (15 ECTS points);
- Major Disciplines (49 ECTS points), which consist of university components (31 ECTS points) and electives (18 ECTS points);
- Research Work (24 ECTS points);
- Final Attestation (12 ECTS points).

The Core Disciplines of both Master's programmes in Biology include courses such as "History and Philosophy of Science", "Foreign Language", "Pedagogy of Higher Education", "Psychology", and "Teaching Internship".

The Major Disciplines in the Master's degree programme Biology cover fundamental principles and phenome of life as well as cellular technologies in biology and medicine, while the major courses in the Master's degree programme Biology (pedagogical education) focus on scientific and pedagogical methods of research, the integration of disciplines in teaching biology, and the organisation and management of educational processes.

During the discussion with the peers, the students point out that there are some overlaps in the Master's degree programme Biology (pedagogical education) in the area of the pedagogical courses. For this reason, the peers expect the teachers to better align the courses' content and to make sure that there are only intentional overlaps.

The Bachelor's degree programme Genetics includes lectures, seminars, and laboratory classes. The essence of the phenomena and processes being studied is presented in lectures during which students are explained the basic methods and concepts. In seminars, students discuss the material being studied and solve relevant tasks. In laboratory classes, students gain practical skills to work with specific laboratory equipment and modern methods of genetics and molecular biology.

The structure of the Genetics programmes is as follows:

- General Education Disciplines (56 ECTS points), which consist of compulsory courses (51 ECTS points) and electives (5 ECTS points);
- Core Disciplines (112 ECTS points), which consist of university components (94 ECTS points) and electives (18 ECTS points);

- Major Disciplines (60 ECTS points), which consist of university components (36 ECTS points) and electives (24 ECTS points);
- Final Attestation (12 ECTS points).

The General Education Disciplines are not subject-specific and include courses such as "Modern History of Kazakhstan", "Philosophy", "Information and Communication Technologies", "Foreign Language", and "Physical Training". These courses are usually offered in the first semesters of the Bachelor's programme and all bachelor's students at KazNU (and all other Kazakh universities) have to take them – irrespective of their concrete study programmes.

The Core Disciplines cover the major areas of genetics and related natural sciences and include courses such as "Biodiversity of Plants and Animals", "Inorganic and Organic Chemistry", "Biochemistry", "Mathematics and Physics", "Cytology, Histology and Embryology", "Anatomy and Physiology of Humans and Animals", "Genetics", "Microbiology and Virology", "Genetic Engineering", and "Medical and Forensic Genetics".

The Major Disciplines are more advanced courses, which are offered from the fifth semester. They include courses such as "Molecular Biology and Gene Diagnostics", "Cytogenetics", "Molecular Genetic Analysis", and "Biostatistics".

The electives encompass 47 ECTS points, which is a lot for a Bachelor's degree programme. The offer of elective disciplines ensures that students can build an individual learning trajectory and specialise in a specific field of genetics. Lectures account for 32%, professional practice for 17%, and laboratory work for 51% of all classes.

During the audit, the peers discuss with the programme coordinators why the course "Scientific Research Methods" is only an elective and not a compulsory course in the Bachelor's programmes. The programme coordinators explain that this change was already proposed to the Scientific Council of KazNU, because the teachers think that it would be useful that all bachelor's students are required to learn about scientific methods, literature research, and good scientific practice. The peers support this point of view.

The Bachelor's students criticise during the discussion with the peers that one hour of laboratory work per week in the biochemistry course is not enough to complete all the required experiments. To solve this problem, the students suggest to have the 15 hours per semester offered in several (e.g. three or five) practical sessions and not to have just sessions of one hour every week, this way, students can use the available time more efficiently and conduct more experiments. The peers support this suggestion.

The Master's degree programme Neuroscience is designed for two years with 120 ECTS points and offered as a full-time programme. Its structure is as follows:

- Core Disciplines (35 ECTS points), which consist of university components (20 ECTS points) and electives (15 ECTS points);
- Major Disciplines (49 ECTS points), which consist of university components (31 ECTS points) and electives (18 ECTS points);
- Research Work (24 ECTS points);
- Final Attestation (12 ECTS points).

The Core Disciplines of the Master's degree programme Neuroscience include courses such as "History and Philosophy of Science", "Foreign Language", "Pedagogy of Higher Education", "Psychology", and "Teaching Internship".

The Major Disciplines in the Master's degree programme Neuroscience cover fundamental biological principles in neuroscience, human functional systems, and biophysics for neuroscience.

The PhD programme Neuroscience is designed for three years with 180 ECTS points and offered as a full-time programme. Its structure is as follows:

- Core Disciplines (20 ECTS points), which consist of university components (15 ECTS points) and electives (5 ECTS points);
- Major Disciplines (25 ECTS points), which consist of university components (20 ECTS points) and electives (5 ECTS points);
- Research Work (123 ECTS points);
- Final Attestation (12 ECTS points).

The Core Disciplines of the PhD programme Neuroscience include courses such as "Academic Writing", and "Methods of Scientific Research".

The Major Disciplines in the PhD programme Neuroscience cover advanced subjects in neuroscience and include courses such as "Neural Plasticity", "Learning and Memory", "Behavioral Neuroscience", "Connectivity and Big DATA", "Human-Computer Interaction", "Neuropathology", "Brain and Aging", and "Consciousness Theories: from Philosophy to Neurocybernetics".

The peers discuss with KazNU's management and the programme coordinators for what reasons the new neuroscience programmes were just recently started in 2021 and how the programmes cooperate with other faculties. They learn that they are the only neuroscience

programmes in Kazakhstan and the Department of Biophysics, Biomedicine, and Neuroscience, which is responsible for the programmes, cooperates with the Faculty of Medicine and Health Care for joint research projects in cognitive neuroscience and neurosurgery, e.g. in the area of brain cancer. Additionally, the department has several international cooperations for example with the University of Cambridge and the University of Bremen. Moreover, KazNU will open a "Brain Center" on campus; the Rector has just signed the respective contract and is planning to cooperate with Nazarbayev University and Eurasian University for establishing neuroscience programmes at these Kazakh universities. The neuroscience programmes were established because there is a high demand from the society (aging population), the industry, and the medical sector for qualified scientists. At the same time, the KazNU wants to expand to neurosciences to include this area in their research activities such as cognitive, medical and computational neuroscience. The newly established neuroscience programmes are a necessary and important development, as neuroscience will become even more important in an aging society to understand neurodegenerative diseases. In addition, concepts of neuroscience will be used to improve the rapidly developing artificial intelligence. The recently founded "Brain Center" is the next logic step.

The Master's students point out during the audit that the compulsory course "Research Practice" (IP 6305) has a minimum of only two weeks. In order to gain relevant practical experience, the internship should be prolonged to four to six weeks and the awarded ECTS points adjusted accordingly. Otherwise, students will not gain any useful insights.

The members of the teaching staff explain on demand of the peers that they offer possible topics for the final projects according to their own research projects. All members of the teaching staff supervise theses. In addition, students can also develop their own concepts for their theses (Bachelor's and Master's) and it is possible to conduct the thesis outside KazNU.

In the discussion with the peers, the employers express their satisfaction with the qualification profile of the graduates of all programmes under review. They point out that KazNU, especially in the area of life sciences is one of the best universities in Kazakhstan and that there is a high demand for graduates. For this reason, they would like KazNU to educate more students so that the vacancies, especially in research institution, can be filled.

The peers discuss with the programme coordinators what courses in the Master's programmes are taught in English. They learn that to improve students' English proficiency several courses in the Master's programmes are taught in English even if the official programme language is either Russian or Kazakh. This, for example, includes the course "Academic Writing" where students read and present English scientific publications and learn how to write scientific papers. In addition, in the Master's degree programme Neuroscience the courses "Psychology of Management", "Organization and Planning of Scientific

researches", "Evolutionary and Developmental Neurobiology", "Cognitive Psychology", and "Fundamentals of Cognitive Neuroscience" are taught in English. The number of courses, which are taught in English is lower in the biology programmes. In the Master's degree programme Biology (Pedagogical Training) the courses "Modern problems of theoretical and practical biology", "Interdisciplinary aspects of biology teaching", and "Digital content in biological education" are offered in English, while in the Master's degree programme Biology only the course "Organization and Planning of Scientific Research" is taught in English. During the audit, the peers observe that the English proficiency of the Master's and PhD students is quite high, therefore, they are satisfied with the existing language education.

After analysing the module descriptions and the study plans, the peers confirm that all degree programmes under review are divided into modules and that each module is a sum of coherent teaching and learning units. All practical lab work and internships are well integrated into the curriculum and the supervision by the Faculty of Biology and Biotechnology guarantees for their respective quality in terms of relevance, content, and structure.

In summary, the peers confirm that the choice of modules and the structure of the curriculum ensure that the intended learning outcomes of the respective degree programme can be achieved.

International Mobility

KazNU provides some opportunities for students to conduct internships and exchange programmes abroad. Students who take part in student exchanges through cooperation programmes can gain recognition of the acquired credits after signing a learning agreement. The transfer of credits is carried out by the Registrar's Office on the basis of the student's application and the presentation of supporting documents in coordination with the Department of Academic Affairs.

The Department of International Relations of KazNU is responsible for managing and coordinating the international activities such as coordinating and managing student mobility programmes, developing and maintaining relationships with partner institutions and organisations around the world, recruiting and admitting international students, providing support and assistance to international students during their time at KazNU, such as helping with housing, visa issues, and other practical matters.

The number of undergraduate and graduate students who participate in international exchange programmes is still low despite students' high interest. For example, almost no genetics students went abroad since 2019. The numbers are similar for the Master's degree programmes, only in the Bachelor's degree programme Biology several students have

joined international programmes within the last few years. Undergraduate students in their third or fourth year of studies have the opportunity to join international universities. To this end, the Department of Bioresources and Biodiversity has agreements with the University of Salento (Italy), Eberswalde University of Sustainable Development (Germany), and Vytautas Magnus University (Lithuania).

The other departments in the Faculty of Biology and Biotechnology have several international cooperations. For example, the Master's degree programmes Biology have agreements with Drexel University (Philadelphia, USA), Ben-Gurion University (Israel), Moscow State University, Peoples' Friendship University (Russia), and Tomsk University (Russia). In a similar way, the Department of Molecular Biology and Genetics has several agreements with universities in Europe, Asia, and North America. In the Self-Assessment Report the following universities are mentioned: University of Paris-Sud/CNRS/Gustave Roussy Cancer Campus (France), the University of MD Anderson Cancer Center (USA), the Institute of Molecular and Cellular Biology SB RAS (Russia), N.I. Vavilov Institute of General Genetics (Moscow, Russia), Tomsk State University (Tomsk, Russia), Institute of Molecular and Cellular Biology SB RAS (Novosibirsk, Russia), Novosibirsk State University (Novosibirsk, Russia), M.V. Lomonosov Moscow State University (Moscow, Russia), St. Petersburg State University (St. Petersburg, Russia), University of Paris-Sud/CNRS/Gustave Roussy Cancer Campus (Paris, France), University of Poitiers (Poitiers, France), La Salle University (Philadelphia, USA), Virginia Tech University (Blacksburg, USA), University of Chicago (Chicago, USA), University of Salento (Lecce, Italy), Vytautas Magnus University (Kaunas, Lithuania), Haifa University (Haifa, Israel), University of Warsaw (Warsaw, Poland), University of Poznan of Technology (Poznan, Poland), University of Cadiz (Cadiz, Spain), and University of British Columbia (Vancouver, Canada).

In the neuroscience programmes, which are offered by the Department of Biophysics, Biomedicine, and Neuroscience, offers academic mobility opportunities with the University of Cambridge, University of Florida, University of Cincinnati, Oregon State University, University of Sheffield, Sharja University (UAE), Scoltech Innovation Center (Russia), and Lomonosov Moscow State University. In addition, the department cooperates with the University of Oregon and George Mason University for conducting research activities.

The students confirm during the discussion with the peers that some opportunities for international academic mobility exist and that the credits acquired abroad are recognised at KazNU. However, they also point out that they wish for more places and better endowed scholarships for long- and short-term stays abroad. The number of available places in the exchange programmes is still limited and there are restrictions due to a lack of sufficient financial support. KazNU can provide only limited grants, while the demand from students

is rising. The lack of financial support hinders students from joining the outbound programmes. National scholarships are available, but they are highly competitive, so only a few students receive them.

The peers understand these problems and see that academic mobility was severely impacted by the Corona pandemic, but the restrictions have been resolved and traveling and studying abroad is easily possibly again. Mostly short term stays abroad of some weeks are conducted (e.g. in Czech Republic), however, it would be useful to encourage students to take part at long term (one or two semesters) academic mobility programmes (e.g. ERASMUS+) in order to study or conduct research projects at universities abroad.

The peers emphasize that it is very useful for students to spend some time abroad already during their Bachelor's studies to improve their English proficiency, to get to know other educational systems, and to enhance their job opportunities.

In summary, the peers appreciate the effort to foster international mobility and support KazNU and the Faculty of Biology and Biotechnology to further pursuing this path.

Criterion 1.4 Admission requirements

Evidence:

- Self-Assessment Report
- KazNU Admission Regulation
- Order of the Minister of Education and Science of the Republic of Kazakhstan on October 31, 2018 № 600
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The admission procedure for the Bachelor programmes is constituted by regulations issued by the Kazakh Ministry of Education and conducted through a nationwide unified exam after completing the high school or professional school. The Unified National Test (UNT) includes the examination of Kazakh and Russian, Mathematics, History of Kazakhstan and one elective subject, depending on the chosen specialty. Depending on national demand the Ministry of Education and Science defines a limited amount of scholarships for each Bachelor's programme offered to those with the highest score. A state grant includes free tuition and a scholarship for living expenses. If a student has good grades in his first semesters at the University, she or he can apply during the studies for a state grant. It is also possible to enroll on a fee-paid basis; however, the required minimum score of the Unified

National Test must still be met. Enrollment is carried out separately for each degree programme and study language (English, Kazakh, or Russian).

For admission to the Master‘s programmes applicants need to have a Bachelor’s degree from a similar scientific background and have to pass an entrance exam, called comprehensive test (CT). Persons with a Master's degree and at least nine months of work experience are allowed to apply for doctoral studies and taking the entrance exam. Students applying for a Master’s degree programme must first pass a test of foreign language (usually English) and then a subject specific test (written exam). The sum is the admission points that form the basis of the decision about the admission. PhD students need to provide verification of their English proficiency, pass a subject specific written test, submit an essay about their research ideas and pass an interview bin order to get admitted to the PhD programme Neuroscience. Acceptance of applications for Master's and PhD programmes is carried out online by the University Admissions Committee. National scholarships for each degree programme are offered to those with the best results in the entrance exam.

The maximum intake per year is 200 students in the Bachelor’s degree programme Biology, 70 students in the Bachelor’s degree programme Genetics, 30 students in the Master’s degree programme Biology, 120 students in the Master’s degree programme Biology (pedagogical education), 20 students in the Master’s degree programme Neuroscience and only five students in the PhD programme Neuroscience. However, this quota is not reached by any of the six degree programmes. The number of newly enrolled students is clearly below the number of available study places. For example, in the Master’s degree programme Biology, only around 20 new students are enrolled every year.

The number of newly enrolled students in the six programmes under review for the last four year is depicted in the following table:

Degree Programme	**2019-2020 academic year**	**2020-2021 academic year**	**2021-2022 academic year**	**2022-2023 academic year**
Ba Biology	152	26	138	99
Ma Biology	22	20	22	21
Ma Biology (pedagogical training)	12	32	45	68
Ba Genetics	59	5	19	20
Ma Neuroscience	-	-	4	6
PhD Neuroscience	-	-	2	1

Table 1: Statistical data on enrolled students, Source: SAR KazNU

The peers observe that the number of admitted students in all degree programmes under review is below the maximum intake. They ask the programme coordinator for the reason, why the annual intake is lower than the capacity of the programmes. The programme coordinators explain that the Kazakh Ministry provided less grants than the employers would like to hire. The number of grants for the degree programmes in the area of life sciences (including biology, genetics, and neuroscience) was not increased after the new programmes were established, so there are not enough grants for all the programmes which leads to less applications. The number of grants provided by the Kazakh Ministry will increase if the programmes receive international accreditation. Since the demand form the employers is very high, the peers hope that KazNU will enrol more students in the area of life sciences in the next coming years.

As stated in the Self-Assessment Report, there are currently 382 students in the Bachelor's degree programme Biology, of whom 331 study in the Kazakh group and 51 in the Russian group. In the Bachelor's degree programme Genetics, there are currently 96, of which 70 students study in the Kazakh language group, and 26 in the Russian language group. The Master's degree programme Biology (pedagogical education) has currently 106, of which 99 study in the Kazakh language group, and 7 in the Russian language group. The number of enrolled students are significantly lower in the Master's degree programme Biology. Here, 34 students are enrolled, of whom 27 study in the Kazakh group and 7 in the Russian group. There are currently nine students in the Master's degree programme Neuroscience (seven in the Kazakh group and 2 in the Russian group) and three students in the PhD programme Neuroscience.

In the Bachelor's degree programme Biology, several international students are enrolled. According to the data provided by KazNU, there are currently 85 international students enrolled in the Bachelor's degree programme Biology, most of them from Turkmenistan (81), and some from Mongolia (1), and Uzbekistan (3).

Several students (Bachelor, Master, or PhD) receive scholarships, which are based on the academic merits during the studies. Nevertheless, it is also possible to enrol on a payment basis. The tuition fees vary according to the academic level (Bachelor, Master, or PhD) and are higher for classes taught in English and for foreign students. According to the Self-Assessment Report the fees range between 1.130.000 (2300€) for Kazakh Bachelor's students and 2.804.000 Tenge (5704€) for foreign PhD students for the whole degree programme.

In Kazakhstan, the demand for university graduates is determined by a national order. This plan includes how many state grants can be awarded each year for specific subjects at certain national universities. The high school graduates who achieve the highest scores on the UNT receive a state grant and can choose the subject and the university where they want

to study. A state grant includes free tuition and a scholarship for living expenses. If a student has good grades in her/his first semesters at the university, she or he can apply during the studies for a state grant. It is also possible to enroll on a fee-paid basis. Enrollment is carried out separately for each degree programme and study language.

In summary, the auditors find the terms of admission to be binding and transparent. They confirm that the admission requirements support the students in achieving the intended learning outcomes.

Criterion 1.5 Work load and credits

Evidence:

- Self-Assessment Report
- Study plans
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:
KazNU applies the European Credits Transfer System (ECTS) for measuring the students' total workload. The peers confirm that ECTS points are awarded for all mandatory parts of the degree programmes, including work practices (internships). The workload includes contact hours and time for independent work.

The Bachelor's degree programmes encompass 240 ECTS and one ECTS credit is equal to 30 hours of students' total workload. The Master's degree programmes encompass 120 ECTS points, and the PhD programmes 180 ECTS points. Details on the students' total workload in hours are presented in the module descriptions of each degree programme.

The standard period of study 4 years (8 semesters) for the Bachelor's degree programmes, 2 years (4 semesters) for the Master's degree programmes, and 3 years (6 semesters) for the PhD programme.

In summary, the peers conclude that the total work load of the degree programmes is adequate and that there is no structural pressure on the quality of teaching and the level of education due to the work load. The students express their general satisfaction with the amount and the distribution of their work load. The estimated time budget is realistic, and the students can usually complete the respective degree programme without exceeding the standard study period.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Self-Assessment Report
- Study plans
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:
During the classes, active and interactive teaching methods (e.g. lectures, discussions, reports, presentations, and group work) are applied. Al-Farabi KazNU wants to encourage the students to gain knowledge from different scientific areas and wants them to be able to solve specific problems through an interdisciplinary approach. This should ultimately contribute to the transition from a teacher centered to a student oriented teaching method. In order to involve all students in the learning process and to develop their thinking and analytical skills, the teaching staff uses several methods of training and gives assignments on different levels of complexity.

The most common method of learning in the Bachelor's degree programmes is class session, with several courses having integrated laboratory work. Lecturers generally prepare presentations to support the teaching process. At Bachelor level, the students first gain theoretical knowledge and have more practical classes in their further studies. At Master level, students conduct more individual scientific research. In general, the following teaching methods are used in the degree programmes: lectures; seminars, laboratory classes, internships, small group activities, and final thesis.

With individual or group assignments, such as discussions, presentations, or written tasks, students are expected to improve their academic as well as their soft skills. Laboratory work covers laboratory preparation, pre- or post-tests, laboratory exercises, reports, discussions, and presentations. In addition, practical activities should enable students to be acquainted with academic research methods.

In the Master's degree programmes, and especially in the PhD programme, more student centred learning models are applied in order to improve students' analytical and scientific skills. To this end, in most courses didactic methods such as cooperative learning, case studies, and project based learning are applied. In general, the focus in the Master's degree programmes and the PhD programme is on self-organised learning and research oriented teaching and learning methods.

In summary, the peer group considers the teaching methods and instruments to be suitable to support the students in achieving the intended learning outcomes. In addition, they confirm that the study concepts of all programmes under review comprise a variety of teaching and learning forms as well as practical parts that are adapted to the respective subject culture and study format. It actively involves students in the design of teaching and learning processes (student-centred teaching and learning).

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 1:

The peers thank KazNU for clarifying that according to the curriculum "6B05105 - Genetics" in the course "Biochemistry" has 6 credits, which 1 hour per week for the lecture, 1 hour per week for the seminar, 2 hours per week for laboratory work, and 120 self-study hours. However, the peers still think that the programme coordinators should discuss with the students how the organisation of the laboratory work can be optimised and if it would not be more useful to have longer practical sessions.

The peers support the plans to increase the students' academic mobility and encourage KazNU to further pursuing this path.

The peers understand that the low number of students in the Master's degree and PhD programmes Neuroscience can be explained by the fact that the programmes are relatively new for Kazakhstan.

The peers consider criterion 1 to be mostly fulfilled.

2. Exams: System, concept and organisation

Evidence:

- Self-Assessment Report
- Module descriptions
- KazNU Rules for conducting summative assessment
- KazNU Academic Policy
- Discussions during the audit

Preliminary assessment and analysis of the peers:
According to the Self-Assessment Report, there is a period for midterm exams and a period for the final exams. The form of the exams for each module is specified in the module descriptions. Periods of examinations are scheduled in the academic calendar. During the examination period students take exams according to the approved schedule. There is a comprehensive exam in each module, it is conducted by the teachers of all disciplines of the module and there is a joint examination score, which is set in the official transcript and on the online platform “IS Univer”.

In order to compensate for a final examination that has not been passed, a student must repeat the course either in the next semester or in the additional summer semester. The summer semester is aimed at students who have performance deficits and have to take some exams, and a fee is charged for each credit point to be made up. A failed exam can only be repeated twice. After the third unsuccessful attempt, the student concerned must change degree programmes.

Midterm examinations are obligatory and carried out in accordance with the academic calendar. Form and content of midterm examinations are determined by the teacher of each module. The sum of all points, for the midterm exams and the ongoing monitoring, are entered into the electronic journal by the teacher. Students, who scored at least 50 points according to the results of two midterm controls, are allowed to take the final exam. The maximum score for the final exam is 100 points.

During the examination period the students must take all exams according to the schedule in strict accordance with the individual study plan. In some cases (due to illness, family emergency and other similar reasons) the Dean of the Faculty can make exceptions from this strict examination plan. The final grade is composed of the admission points and the grade of the final exam. The students can see their results on online platform “IS Univer”.

Students who fail too many credits may lose their state grant and they have to repeat the academic term. Only very few students leave the university without a degree. The academic advisors and the teaching staff try to help the students to make up time lost by e.g. illness during the semester so that every student has a chance to pass the final exam.

The final exams are conducted in various forms. Oral exams are applied in a number of modules, tests are PC based; and most final exams are written exams. A detailed examination plan is handed out to the students at the start of each semester. The auditors point out that there are a lot of written exams and that it would be necessary to better align the range of possible forms of examination with the intended learning outcomes of the respective module. Therefore, they recommend reducing the number of written exams in favor of more oral exams.

The auditors inquire about the Bachelor's and Master's theses and would like to know, whether these are done at the university or externally at companies or research institutions; they also ask about the involved quality management. They learn that several students, especially in the Master's degree programmes, do their final thesis at external research institutions. The quality of external research activities is checked by the supervisor, and one supervisor of the final thesis must be a member of the teaching staff.

As part of the on-site visit, the experts also inspect exemplary examinations as well as Bachelor's and Master's theses from all courses of study. Overall, they are satisfied with the quality of the examinations and theses.

As described in the Self-Assessment Report, students at KazNU need to attend at least 50% of the classes, otherwise, they may not be admitted to take part at the courses' final exam. Make-up exams are offered for students that could not participate, for example in cases of illness or other eligible reasons.

The grades for the exams range from A to F, and/or between 4.00 and 0.00. If students fail a course - they need to re-sit the course again in the following semester. Students who object to the final grade of their courses are allowed to file a complaint. The details of the procedure are described in the Academic Policy.

Every student in the programmes under reviews required to do a final project (Bachelor's, Master's thesis, or PhD thesis). The Bachelor's thesis is a scientific work report written by students in the Bachelor's programme that focuses on a specific and usually consists of literature study, practical research, data analysis and presentation in figures or tables, and writing the thesis under the supervision of a teacher. Students can choose topics for their thesis according to the areas offered by the research groups of the different departments. In addition, students can develop their own ideas and look for a suitable supervisor. It is also possible to conduct the thesis outside KazNU in the industry or at a research institute.

The Master's thesis is an academic paper, which includes an independent in-depth study of a scientific topic and which creates innovation or provides new contributions to the scientific or technological development of respective scientific area, in this case biology or neurosciences. The Master's thesis is conducted with the guidance of the thesis advisor. Students can see the teachers' evaluation grades on "IS Univer" and thus decide who to choose as a thesis supervisor or what electives to choose. PhD students have a thesis supervisor from KazNU and an external supervisor from abroad e.g. from a university with which KazNU cooperates. PhD students need to publish two articles on the topic of the thesis.

The peers also inspect a sample of examination papers and final theses and are overall satisfied with the general quality of the samples.

In summary, the peers confirm that the different forms of examination used are competence-oriented and are suitable overall for verifying the achievement of the intended learning outcomes as specified in the respective module descriptions. The form of examination is determined individually for each course and published in the respective module description. The forms of examination are based on the main content of the modules and the level is appropriate for the respective degree programme.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2:

KazNU does not comment on this criterion in its statement.

The peers consider criterion 2 to be fulfilled.

3. Resources

Criterion 3.1 Staff and Development

Evidence:

- Self-Assessment Report
- Staff Handbook
- Study plans
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:

At KazNU, the staff members have different academic positions. There are professors, associate professors, assistant professors, and lecturers. The academic position of each staff member is based on research activities, publications, academic education, supervision of students, and other supporting activities. For example, a full or an associate professor needs to hold a PhD degree. The responsibilities and tasks of a staff member with respect to teaching, research, and supervision depend on the academic position. In addition, there are non-academic staff members consisting of librarians, technicians and administrative staff.

The number of professors and lecturers in the different degree programmes according to their academic position and the share of teachers with a PhD degree is depicted in the following table:

Degree programme	Number of professors	Number of associate professors	Number of assistant professors	Number of lecturers	Share of teachers with a PhD
Ba Biology	5	5	8	22	100%
Ma Biology	5	5	8	11	100%
Ma Biology (pedagogical training)	1	2	3	3	100%
Ba Genetics	9	19	19	6	89%
Ma Neuroscience	3	6	2	3	100 %
PhD Neuroscience	5	2	2	0	100 %

Table 2: Statistical data on teaching and their academic position, Source: SAR KazNU

The teaching staff is supplemented by individual lecturers from industry and individual international visiting professors. In addition, technical staff, such as laboratory assistants and technicians, are employed to carry out the internships. The academic position of each lecturer is based on research activities, publications, academic education, student support and other supporting activities.

The auditors discuss with the programme coordinators the composition and qualification of the teaching staff. They learn that each member of the teaching staff is approved by the Rector of KazNU. The number of staff members is determined by the number of degree programmes, the amount of teaching workload, and the number of admitted students.

Finally, the auditors find out that almost all of the members of the teaching staff are involved in research activities. If teachers are scientifically successful their teaching workload can be reduced in favor of more time for research activities. The auditors conclude that the research activities carried out by the teaching staff are in line with and support the level of academic qualification aimed at.

The peers discuss with KazNU's management how new staff members are recruited. They learn that every year the faculties and departments announce their vacancies to KazNU's management, which subsequently announces the vacancies nationally and internationally. However, the peers note that a large share of the teachers are graduates from KazNU. The representatives of the Rector' Office explain that KazNU is open to hire graduates from all universities, nevertheless, many members of the teaching staff are graduates from KazNU. This is also due to the fact that KazNU is one of the most prestigious universities in Kazakhstan and produces highly qualified graduates. The peers understand this reasoning but point out that KazNU should make sure that academic staff members also acquire scientific experience at other universities either in Kazakhstan or abroad.

During the audit, the peers inquire how high the teaching load is and if enough opportunities are offered to the academic staff members to conduct research activities. They learn

that teachers at the Faculty of Biology and Biotechnology usually have a teaching load of 400 hours per year, which results in about 13 hours of teaching per week, because there are 15 weeks of teaching per semester. All teachers supervise final projects, at most teachers supervise eight Bachelor's and two Master's theses. The members of the teaching staff confirm during the audit that their teaching load is appropriate and leaves them enough time for conducting research activities.

In summary, the peers confirm that the composition, scientific orientation and qualification of the teaching staff are suitable for successfully implementing and sustaining both degree programmes.

Staff Development

The peers discuss with the members of the teaching staff the opportunities to spend time abroad and to participate in international projects. They learn that there are several international cooperations (see criterion 1.3) and that there is a special fund for financing the participation at international conferences. In addition, the members of the teaching staff can visit international partners that are involved in their research activities.

The members of the teaching staff mention that there is an internal qualification programme at KazNU in place that offers courses to improve the professional and didactic skills of the teachers. During the onsite visit the members of the teaching staff express their general satisfaction with their opportunities to further improve their teaching skills.

Long term stays abroad for conducting research projects are possible for all members of the teaching staff. Grants from different sources are available and during their absence the teaching load is covered by other teachers from the department. In general, the peers gain the impression that several opportunities for teachers exist to spend time abroad and to participate in international projects. The teachers confirm this positive assessment and state their satisfaction with the existing opportunities.

In summary, the auditors confirm that KazNU offers sufficient support mechanisms and opportunities for members of the teaching staff who wish to further develop their professional and teaching skills.

Student Support

KazNU provides an extensive support system for all students; it includes consultations with advisors about the individual educational plan and the study progress. Furthermore, the advisor conducts educational work with the assigned students to improve their academic performance and to attract them to participate in social life at the university.

In addition, the students can contact their advisor any time for assistance in academic questions. The members of the teaching staff are available on any issues regarding the degree programmes and offer advice on particular modules, as well as on required papers or reports.

The peers learn that every student upon entering KazNU receives a student handbook which contains information about the organization of the chosen degree programme, on the preparation of an individual study plan, about the monitoring and evaluation of the learning achievements, and the organization of different kinds of internships.

The peer group notes approvingly the good and trustful relationship between the students and the teaching staff; there are enough resources available to provide individual assistance, advice, and support for all students. The support system helps the students to achieve the intended learning outcomes and to complete their studies successfully and without delay.

Criterion 3.2 Funds and equipment

Evidence:

- Self-Assessment Report
- Visitation of the facilities
- Discussions during the audit

Preliminary assessment and analysis of the peers:
Basic funding of the degree programmes under review and the respective facilities is provided by KazNU and the Faculty of Biology and Biotechnology.

The financial sources are government funding which cover the salaries of all employees and the grants for students. The rest of KazNU's funds are derived from students' tuition fees and research cooperations. The departments can apply for additional funds for purchasing expensive and sophisticated instrument for conducting research projects. The university's management forwards these applications to the Kazakh Ministry of Education and Science, which decides on the funding.

The budget of the Faculty of Biology and Biotechnology includes grants for students, which are provided by the Ministry of Education and Science of the Republic of Kazakhstan and the tuition fees of students studying on a paid basis, as well as funds of research projects. The budget of the Faculty of Biology and Biotechnology for the last two years is shown in the following table:

Source	Year	
	2022	**2023**
Educational grants	1 313 397 813 (€2694762)	1 292 461 392 (€2651806)
Self-paid education	232 713 000 (€477468)	213 450 000 (€437945)
Research Projects	591 051 830 (€1212690)	605 781 230 (€1242911)

Table 3: Funds available to the Faculty of Biology and Biotechnology, Source: SAR KazNU

The Faculty of Biology and Biotechnology uses 58 classrooms on a regular basis in the course of educational activities, additionally there are two large auditoriums, 24 laboratories, and three computer-rooms. There are laboratories for the following areas: "Applied Microbiology", "Biomaterials", "Environment", "Modern Biotechnology", "Plant Biotechnology", "Biochemistry", "Bionanotechnology", "Molecular Ecophysiology", "Plant Ecology", "Ecological Morphology and Bioindication", "Biomorphology of plants", “Zoology”, "Biological productivity of reservoirs", "Ecotoxicology", "gene pool of the drosophila line", "Molecular Genetics", “Ecological and genetic monitoring", and "Mutagenesis". In addition, there are several collections, including a herbarium.

The Faculty of Biology and Biotechnology also cooperates with several research institutions in Almaty and other cities, so that students and teachers can use the facilities there e.g. for conducting practical work, research activities, and theses. This includes, for example, JSC "Scientific Center for Anti-infectious Drugs", Institute of Genetics and Physiology (Almaty), M.A. Aitkhozhin Institute of Molecular Biology, M. Aikimbayev Kazakh Scientific Center for Quarantine and Zoonotic Infections, Research Center "Cognitive Neuroscience" at Al-Farabi KazNU, Center for Biomedicine Al-Farabi KazNU, JSC "National Center for Neurosurgery" (Astana), and Institute of Neurology named after S. Koishibaeva (Almaty).

During the audit, the peer group also visits the laboratories in order to assess the quality of the infrastructure and the technical equipment. In general, the laboratories are functional for the purposes of the programmes. The laboratories are equipped not only with the necessary basic equipment such as thermocyclers (PCR machines), clean benches, incubators, laboratory shakers but also with some advanced and modern laboratory equipment like a 10L-fermentor, FPLC systems for protein purification and spectrophotometers. Essential equipment such as microscopes, centrifuges, micro-pipettes, tanks for Zebrafish breeding, gel electrophoresis equipment is available and suitable for advanced experimentation. Some laboratories are equipped with fume hoods for the handling and transferring of chemical compounds. The EEG-lab meets international standards. Access to fMRI is possi-

ble but not on campus. The equipment with computers and professional software is adequate. There is sufficient space in the laboratories and instrumental setups for teaching courses to small student groups, as is foreseen in the programme descriptions. The facilities include also a museum of natural history showing examples of the local biodiversity and the evolution of the major organismic groups. This is useful for teaching basic biology to school students and for directing their interest to the field.

The research laboratories are sufficient for the current research; however, the labs would benefit from additional modern equipment, but this requires also scientists to operate them. It will take the next five to ten years to train scientists and develop the complex field of neuroscience. To facilitate this development international collaborations will be important. To this end the current connections are excellent and should be intensified; however, additional financial support for excellent students pursuing a PhD at universities abroad might be a good measure.

From the peers' point of view the infrastructure is sufficient for teaching the students and sufficient instruments and equipment is available for conducting research activities. This positive impression is confirmed by the students as well as the teachers who express their satisfaction with the facilities and technical equipment. However, there are two issues mentioned by the members of the teaching staff where they see a need for improvement. First, the teachers from the Department of Bioresources and Biodiversity point out that it would be very useful to have a research station as a base for conducting field trips with Biology students. The old station was sold (privatised) and KazNU does not have its own station now. The peers explicitly support this point of view. Second, the teachers state that they would like to have the opportunity to offer virtual laboratories for conducting and presenting experiments online. Additionally, they would like to offer digital lectures for different Kazakh universities for the same courses, for this (virtual labs and common lectures) they would need financial and technical support from KazNU.

KazNU's management points out that there is no bottleneck due to missing resources, but the university would like to expand and accept more students. For this reason, new educational building and dormitories will be built on campus, the construction of the first new buildings has already started. Financing is provided by the Kazakh government and through public-private partnerships.

The peers are impressed by the modern campus facilities especially by the new Students Service Center "Keremet" with educational, welfare, health, shopping and entertainment services for students, a private cinema, and by the well-equipped and modern library. The central library offers modern IT-services as webinars and e-learning seminars which also could be used to improve the English language skills of the students. Direct access to international scientific databases and relevant scientific journals are also provided.

The students express their general satisfaction with the available resources and conditions of studying, thereby confirming the positive impression of the peer group. The students also express their satisfaction with the library and the available literature there. Remote access via VPN is possible and KazNU offers access to several scientific digital databases such as Scopus, Elsevier, and SpringerLink so that teachers and students access current scientific papers, e-books, and papers.

With respect to the IT-infrastructure, the peers suggest that KazNU should offer Education Roaming (eduroam), which is an initiative that provides employees and students of participating universities and organisations with Internet access at the sites of all participating organisations using their own username and password. This facilitates academic mobility for teachers and students and enables them to access the internet at every participating institution without any restrictions.

The peers conclude that there are sufficient funds and equipment and that the infrastructure (laboratories, library, seminar rooms etc.) complies with the requirements for sustaining the degree programmes.

The peers also see during the audit that students can use and operate the instruments in the laboratories by themselves after being trained and instructed by either senior students or lab technicians. Each laboratory has a lab supervisor; in addition, there are several senior students that work as lab assistants.

In summary, the peer group judges the available funds, the technical equipment, and the infrastructure (laboratories, library, seminar rooms etc.) to comply – besides the mentioned restrictions – with the requirements for adequately sustaining the degree programmes.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 3:

KazNU does not comment on this criterion in its statement.

The peers consider criterion 3 to be mostly fulfilled.

4. Transparency and documentation

Criterion 4.1 Module descriptions

Evidence:

- Self-Assessment Report
- Module descriptions
- Homepage Faculty of Biology and Biotechnology: https://www.kaznu.kz/en/351/page/%20Departments/Faculty_of_Biology_and_Biotechnology
- Homepage Ba Biology: https://www.kaznu.kz/en/24945/page/
- Homepage Ma Biology: https://www.kaznu.kz/en/24937/page/
- Homepage Ma Biology (ped): https://www.kaznu.kz/en/25196/page/
- Homepage Ba Genetics: https://www.kaznu.kz/en/24908/page/
- Homepage Ma Neuroscience: https://www.kaznu.kz/en/25198/page/
- Homepage PhD Neuroscience Biology: https://www.kaznu.kz/en/25199/page/
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The students, as all other stakeholders, have access to the module descriptions via the respective programme's homepage.

After studying the module descriptions of the Master's degree programmes, the peers observe that the module descriptions of the courses "Teaching Internship" and "Research Work" do not include information about the students' total workload (in hours per semester) and the duration of the internship. In addition, it is necessary to provide separate module descriptions for the different courses included in "Research Work" (Research Seminar, Dissertation Writing, Scientific Internship, and Publication in the Proceedings of International Conferences) in the Master's programmes. The mentioned length (60 weeks) is unrealistic and not aligned with the awarded ECTS points (24). The same issue applies to the PhD programme, just the numbers are different (123 ECTS points and 90 weeks). Finally, no module description for the course "Research Practice" (IP 6305) in the Master's programmes was submitted. In general, the peers stress that the module handbooks as published on the programme's webpages need to be complete and that all module descriptions need to include the correct information students' total workload, which includes contact hours as well as time needed for self-studies in hours per semester.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Self-Assessment Report
- Sample Transcript of Records for each degree programme
- Sample Diploma Supplement for each degree programme

Preliminary assessment and analysis of the peers:
The peers confirm that the students of all degree programmes under review are awarded a Diploma and a Diploma Supplement after graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Diploma Supplement contains all required information about the degree programme. The Transcript of Records lists all the courses that the graduate has completed, the achieved credits, grades, and cumulative GPA.

Criterion 4.3 Relevant rules

Evidence:

- Self-Assessment Report
- All relevant regulations as published on the university's webpage

Preliminary assessment and analysis of the peers:
The auditors confirm that the rights and duties of both KazNU and the students are clearly defined and binding. All rules and regulations are published on the university's website and the students receive the relevant course material at the beginning of each semester. This includes a syllabus, which contains more detailed information about the course's content, the exams and the exam schedule that the module descriptions.

In addition, all relevant information about the degree programmes (e.g., module handbook, study plan, intended learning outcomes) is available on the English homepages of the programmes.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 4:

The peers point out that the module handbooks need to be complete and there is still no module description for the course "Research Practice" (IP 6305) in the Master's degree programmes. Even if the mentioned length of the research activities (60 weeks) is in line with KazNU's regulations, the awarded ECTS points still do not fit this length and need to be revised.

The peers consider criterion 4 to mostly fulfilled.

5. Quality management: quality assessment and development

Evidence:

- Self-Assessment Report
- KazNU Academic Policy
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The peers discuss the quality management system at KazNU with the representatives of the Rector's Office and the programme coordinators. They learn that there is an institutional system of quality management aiming at continuously improving the degree programmes. This system relies on internal as well as external quality assurance. Internal quality assurance encompasses all activities focused on implementing measures for improving the teaching and learning quality at KazNU. External quality assurance relies on international accreditation of the degree programmes.

The Accreditation Center for Institutional Studies of KazNU coordinates the work on organisational and methodological support of external procedures and conducts external quality assessment procedures through international accreditation and ensures the quality of its educational programmes in accordance with European standards and quality assurance recommendations. In order to improve the quality of its educational programmes, KazNU actively cooperates with international and national accreditation bodies and organisations to plan and implement measures for the accreditation of its educational programmes. International accreditation is considered as a means of increasing the university's international reputation and partnerships, as a mechanism for forming stronger ties with foreign labour markets, and increasing the number of universities employed in domestic and foreign markets.

Monitoring and evaluation of the quality of educational services at KazNU are carried out by the Department of Academic Affairs and the Center for Accreditation and Institutional Research. Reports on the results are provided to the Members of the Management Board, the Vice-Rector for Academic Affairs, and the Academic Council of the University for revising the curricula, quality assurance, and admission of students. On faculty level, the Academic Committees are responsible for implementing and monitoring the quality assurance measures.

KazNU carries out a detailed analysis and regularly monitors the results of the educational programme s through evaluation by the academic staff, employers, and students. The internal quality management system includes surveys by students, graduates and the teaching staff. Students have the chance to give a feedback on the study conditions, the study process organisation, and the content of the degree programmes. The surveys are conducted at the end of each semester and are accessible via the online platform “IS Univer”. It is not compulsory to fill out the questionnaires, but if students do not participate, they cannot access their account on “IS Univer” until the survey is closed.

There is also a survey undertaken by the teaching staff. The questionnaire consists of several questions aimed at reviewing different aspects of teachers’ activities in the fields of education, research and social life. Finally, employers usually give a feedback to KazNU about the quality and employability of the graduates. The Academic Committees analyse the surveys and if the results are negative they speak with the responsible teacher and try to solve the problems. Members of the Academic Committees visit the classes and listen to the lecture, if the negative evaluation continues the teacher may have to leave the university.

The peers gain the impression that the Faculty of Biology and Biotechnology take the students’ feedback seriously and changes are made if necessary. Nevertheless, the peers see that the results of the course questionnaires are usually not discussed with the students. Consequently, the peers expect KazNU to inform students about the results of the questionnaires and the teachers should discuss with them about possible improvements in the respective course. The feedback loops need to be closed. The surveys could be conducted some weeks before the end of the semester, so that teachers can discuss with their students about the results and what improvement might be possible before the end of the semester.

To promote employment, the Office of Professional Development and Career of the Department of Academic Affairs ensures employers' involvement in holding events to inform students and graduates about employment opportunities and professional internships. Faculties provide constant communication with employers through Employer Councils formed among faculty graduates.

KazNU has a Student Senate, a Student Union "Sunkar", a Student Bureau of the Bologna Process, a Higher Student Council of Dormitories, a Scientific Student Society and several other organisations for students’ activities. Students are given the opportunity to follow their own interests and are involved in the panels. As described in the Self-Assessment Report, the main objectives of student government are the protection and representation of

students' rights and opinions as well as assisting students in dealing with educational, social or other issues affecting their life.

The peers discuss with the representatives of KazNU's partners from public institutions if there are regular meetings with the partners on faculty or department level, where they discuss the needs and requirements of the employers and possible changes to the degree programmes. They learn that some employers and alumni are invited to give their feedback on the content of the degree programmes in the course of the tracer studies. The peers appreciate that KazNU stays in contact with its alumni and the employers.

In summary, the peer group confirms that the quality management system is suitable to identify weaknesses and to improve the degree programmes. The students and all other stakeholders are involved in the process but not all feedback loops are closed.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 5:

KazNU does not comment on this criterion in its statement.

The peers consider criterion 5 to be mostly fulfilled.

D Additional Criteria for Structured Doctoral Programmes

Criterion D 1 Research

Evidence:

- Self-Assessment Report
- KazNU Academic Policy
- Discussions during the audit

Preliminary assessment and analysis of the peers:
As detailed in the Self-Assessment Report, the goal of the PhD programme Neuroscience is to verify that the doctoral candidates are able to conduct original and scientifically relevant research activities in the area of neuroscience. In addition, they should be able to independently analyse and interpret results of their original research activities and should have obtained the latest knowledge in neurosciences. This includes scientific and academic skills as well as creative abilities and practical skills.

Conducting research activities means getting familiar with laboratory work, involvement in research work, use of literature, preparation of seminars, and participation in publishing scientific papers.

Research activities of doctoral students can be carried out within the framework of current national and international projects at the Center for Cognitive Neuroscience, the National Center for Neurosurgery, as well as other universities and research institutes with which there is a scientific cooperation.

A scientific seminar is held regularly for doctoral students, at which they report on the work done in the course of their research activities. Due to the fact that the educational programme was opened only in 2021, there are no published dissertations yet.

As a requirement for completing the Doctoral programme, students have an obligation to publish two articles about their research results in an accepted journal.

Criterion D 2 Duration and Credits

Evidence:

- Self-Assessment Report
- KazNU Academic Policy

- Discussions during the audit
- Study plan
- Module descriptions

Preliminary assessment and analysis of the peers:
The PhD programme Neuroscience encompasses 180 ECTS points and is designed for three years.

Doctoral students are trained on the basis of an individual work and study plan, which is drawn up under the supervision of the scientific advisor. The work plan includes the research area, terms and form of reporting, practical work, structure of the doctoral dissertation, and planning of scientific publications and internships.

At the end of each semester, during the interim assessment of the research work, doctoral students submit a report on the implementation of their individual work plan at a meeting in the responsible department. In addition, at the end of each academic year, doctoral students report on the implementation of their research activities at a meeting of the Academic Council of the Faculty.

Criterion D 3 Soft Skills and Mobility

Evidence:

- Self-Assessment Report
- KazNU Academic Policy
- Discussions during the audit
- Study plan
- Module descriptions

Preliminary assessment and analysis of the peers:

The Faculty of Biology and Biotechnology supports its doctoral students' personal and professional development by teaching them how to present their research results and how to write scientific publications. To this end, doctoral students attend the internal seminar at the Faculty of Biology and Biotechnology, where they have to present their research results.

KazNU offers several supporting programmes for all doctoral students. This includes the Career Development Centre Universitas and offers scholarships to conduct research activities abroad.

As described in the Self-Assessment Report, doctoral students actively participate in local and international conferences. For example, one doctoral student took part in the Society for Neuroscience 2022 conference, held in San Diego, USA. Another doctoral student completed a scientific internship in the period from May 22 to August 19, 2022 at the University of Sheffield, UK. Finally, one doctoral student doctoral student visited the Wolfson Centre for Age-Related Diseases Headache laboratory of King's College London and the pharmacology laboratory of the University of Reading.

Criterion D 4 Supervision and Assessment

Evidence:

- Self-Assessment Report
- KazNU Academic Policy
- Discussions during the audit

Preliminary assessment and analysis of the peers:
Each doctoral student is assigned a scientific advisor at the beginning of her/his studies. The co-supervisor is proposed by the scientific advisor, in coordination with the programme coordinators and the Faculty of Biology and Biotechnology. To this end, PhD students have a thesis supervisor from KazNU and an external supervisor from abroad e.g. from a university with which KazNU cooperates.

The supervisor mentors and guides the student's work during the preparation of the doctoral dissertation, monitors the quality of the student's research work, encourages participation in scientific projects and the publication of the results. The supervisor makes sure that the research goes according to plan, so that all research necessary for the preparation of the doctoral dissertation is done within the planned period.

The Doctoral programme is completed with passing all scheduled exams, preparation and defence of the doctoral dissertation. In addition, PhD students need to publish two articles on the topic of their thesis.

Criterion D 5 Infrastructure

Evidence:

- Self-Assessment Report
- Visitation of the facilities during the audit

- Discussions during the audit

Preliminary assessment and analysis of the peers:
Doctoral students usually perform their research activities in the laboratories at the Faculty of Biology and Biotechnology, the Center for Cognitive Neuroscience, the National Center for Neurosurgery, as well as other universities and research institutes with which there is a scientific cooperation.

Criterion D 6 Funding

Evidence:

- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the peers:
Students of the PhD programme Neuroscience have the opportunity to receive scholarships or research grants from the Ministry of Education and Science of the Republic of Kazakhstan.

In addition, KazNU offers scholarships to conduct research activities abroad and for participating in international conferences and workshops.

The PhD students point out during the discussion with the peers that they have to conduct the compulsory three month long professional practice abroad. Students receive financial support for these stays abroad; however, if students have a family, they will have to provide for them by their own. To this end, it would be useful to offer additional financial support to PhD students with a family, so that their expenses during their stay abroad are better covered.

Criterion D 7 Quality Assurance

Evidence:

- Self-Assessment Report
- KazNU Academic Policy
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The Academic Policy specifies the conditions and procedures of admission, purpose, objectives and learning outcomes, the curriculum, organization of the degree programme, and the rules of doctoral academic studies.

Rules of good scientific practice are followed according to the code of conduct on scientific research work and monitored by external examiners who check for plagiarism and review the dissertation manuscript.

To improve the quality of the Doctoral programme, tracer studies and career tracking are conducted and the results are analysed.

Finally, doctoral students are encouraged to actively joining national and international seminars for dissemination of their research

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion D:

KazNU does not comment on this criterion in its statement.

The peers consider criterion D to be mostly fulfilled.

E Additional Documents

Before preparing their final assessment, the panel asks that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

- Module description for the course “Research Practice” (IP 6305) in the Master’s programmes

F Comment of the Higher Education Institution (31.05.2023)

KazNU provides the following statement:

C Peer Report for the ASIIN Seal

1. The Degree Programme: Concept, content & implementation

Criterion 1.3 Curriculum

According to the curriculum "6B05105 - Genetics" in the discipline "Biochemistry" (6 credits), the workload is distributed as follows: 1 hour per week for Lecture (a total of 15 Contact hours), 1 hour per week for Seminar (a total of 15 Contact hours), 2 hours per week for Laboratory work (a total of 30 Contact hours), and 120 self-study hours (Module Hand-Book - https://www.kaznu.kz/en/24908/page/). For 2 hours of laboratory work, the teacher distributes the task so that students have time to get acquainted with the biochemical methods.

Ma Neuroscience

The compulsory course “Research Practice” (IP 6305), which is only two weeks, allows students to obtain basic relevant competence in working with lab equipment, understand main directions and features in conducting experimental research in Neuroscience, and clarify own individual trajectory in specialization in different fields of Neuroscience. Mainly, the compulsory course “Research Practice” (IP 6305) supports the next “Master’s Student Research (MSR)”, including Scientific Internship and Dissertation Writing, which is in Semester IV (Module Handbook - https://www.kaznu.kz/en/25198/page/).

International Mobility

Ba Genetics

In the next academic year, it is planned to visit the academic mobility of students of the EP "6B05105 - Genetics" in number of about 20 people. At the moment, students are preparing documents (including preparing for IELTS), to submit documents in September to the Ministry of Science and Higher Education of the Republic of Kazakhstan.

Ma Neuroscience, PhD Neuroscience

To provide financial support for international academic mobility in the specialty of Neuroscience, students are engaged in scientific projects funded by the Ministry of Education and Science of the Republic of Kazakhstan. Currently, the staff of Neuroscience is preparing research projects for international scientific funds, which allow to extend the duration of academic mobility and provide students and their families (if it is necessary) with the opportunity to participate in outbound programmes.

Ma 7M01504-Biology (pedagogical training).

Internship IP6305 has 2 weeks duration. Full info in this implementation please, see https://docs.google.com/document/d/1yVu9Ngl6zUpp-gU5_qFk8oYox-TeIH4UC/edit?usp=share_link&ouid=107169726294320403005&rtpof=true&sd=true

KazNU has practice: if a student decides to receive a long-term internship abroad or semester time-period then he conducts the process of coordination with a foreign university,

has the approval procedure of mutually recognized of ECTS, does the Order of KazNU and can even receive a semester study and Internship. In this case, all financial costs student himself pays. Obligatory condition for it: knowledge of English language, high level of academic achievement.

Ma 7M05101-Biology

KazNU has practice: if a student decides to receive a long-term internship abroad or semester time-period then he conducts the process of coordination with a foreign university, has the approval procedure of mutually recognized of ECT, does the Order of KazNU and can even receive a semester study and Internship. In this case, all financial costs student himself pays. Obligatory condition for it: knowledge of English language, high level of academic achievement.

Criterion 1.4 Admission requirements

Ma Neuroscience, PhD Neuroscience

The low number of students in Master's degree and PhD degree in Neuroscience programmes could be explained by the fact that the programme is relatively new for Kazakhstan.

4. Transparency and documentation

Ma Neuroscience, PhD Neuroscience

The length (60 weeks) with the awarded ECTS points (24) in the Master's programme of Neuroscience is carried out in accordance with the rules for developing educational programmes of the University. According to the structure of the EP, a PhD student undergoes theoretical training in one semester, which allows the rest of the time to be completely allocated to organizing, conducting, and processing data from an experimental study in Neuroscience for 90 weeks.

Module description for the course "Research Practice" is available in Module Handbook of Ma Neuroscience https://www.kaznu.kz/en/25198/page/.

Ma 7M01504-Biology (pedagogical training)

The length (60 weeks) for "Research" activity for preparing master dissertation with the awarded ECTS points (24) in the Master's programme of Biology (pedagogical training) is carried out in accordance with the rules for developing educational programmes of KazNU. According to the structure of the EP time is enough for fulfilment of aims indicated in part "Research".

Module description for the course "Research" is available in Module Handbook of Ma Biology (pedagogical training) https://www.kaznu.kz/en/25196/page/

Ma 7M05101-Biology

The length (60 weeks) for "Research" activity for preparing master dissertation with the awarded ECTS points (24) in the Master's programme of Biology (pedagogical training) is carried out in accordance with the rules for developing educational programmes of KazNU. According to the structure of the EP time is enough for fulfilment of aims indicated in part "Research".

Module description for the course "Research" is available in Module Handbook of Ma 7M05101-Biology http://www.kaznu.kz/en/24937/page/

E Additional Documents

Master's degree programme 7M01504-Biology (pedagogical training).

Additional info with description of IP 6305 “Research Practice” with meaning “*Internship practice*” added to Module Handbook for this program. Updated Module Handbook please see on homepage https://www.kaznu.kz/en/25196/page/

Research Practice

Internal Code of KazNU is IP 6305

This is the 1-st type of *Internship practice* - abroad travel to one of series contract Universities for 2 weeks

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.

Next mentioned Scientific Internship in below part “Research“ is 2-nd type of scientific Internship, mainly with local employers: local research bases or Institutes or public schools - for writing a master's thesis.

G 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 according to topic of own master dissertation
3. use laboratory tools during research practice including internship
4. create the scientific materials for seminars
5. analyse 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.

Ma Neuroscience

Module description for the course “Research Practice”

Module Objectives. Students will be able to:

1. to systematize basic principles, methods and forms of organization of research in Neuroscience;

2. critically evaluate the main problems and strategies for conducting scientific research in Neuroscience;

3. analysis of difficulties arising during research activity and planing to solve them;

4. independently conduct research design in Neuroscience;

5. choose research methods and strategies of research most relevant to the subject of a study and follow them in professional activity;

6. possess practical skills of processing research results in Neuroscience;

7. describe, substantiate and present the scientific results of research in Neuroscience.

Module description for the course "Research Practice" is available in Module Handbook of Ma Neuroscience https://www.kaznu.kz/en/25198/page/

Master's degree programme 7M05101-Biology

Additional info with description of IP 6305 "Research Practice" added to Module Handbook for this program. Updated Module Handbook please see on homepage https://www.kaznu.kz/en/24937/page/

MODULE RESEARCH PRACTICE

Module Objectives.

Students will be able to:

1. systematize scientific theories and concepts of modern areas of biology for use in the selection of initial theoretical positions in the creative solution of problem situations scientific, industrial activity;

2. build research activities based on the principles of bioethics, guaranteeing the scientific reliability of the results, conservation and protection of biodiversity, human rights and health;

3. develop a scheme of the experimental stages of semi-production and carry out the technological processes used in the fields of biotechnology and biology on their basis;

4. critically evaluate the main problems and strategies for conducting scientific research in biology;

5. choose research methods and strategies of research most relevant to the subject of a study and follow them in professional activity;

6. possess practical skills of processing research results in biology and biotechnology;

7. review and evaluate scientific products in the field of biology and related fields, such as ecology, medicine, agriculture, biotechnology.

Next mentioned Scientific Internship in below part "Research" is 2-nd type of scientific Internship, mainly with local employers: local research bases or Institutes or public schools - for writing a master's thesis.

H REASEARCH

work of master-students under master thesis or dissertation.

Objectives. Students will be able to:

1. plan research practice according to topic of own master dissertation
2. create the scientific materials for seminars
3. analyze and know the content of new scientific articles in topic of own master dissertation

4. be able to use the principles of assessment and statistical evaluation of results of research practice
5. write the article for publications in available journals and International Conferences;
6. argue the importance of main key components of own master dissertation;
7. write the master dissertation and apply modern educational technologies at writing of dissertation at necessaries
8. do public defence the master dissertation.

G Summary: Peer recommendations (05.06.2023)

Taking into account the additional information and the comments given by KazNU, the peers summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Biology	With requirements for one year	-	30.09.2029
Ma Biology	With requirements for one year	-	30.09.2029
Ma Biology (pedagogical training)	With requirements for one year	-	30.09.2029
Ba Genetics	With requirements for one year	-	30.09.2028
Ma Neuroscience	With requirements for one year	-	30.09.2028
PhD Neuroscience	With requirements for one year	-	30.09.2028

Requirements

For all degree programmes

A 1. (ASIIN 4.1) The module descriptions need to include information about the students' total workload.

A 2. (ASIIN 5) Teachers need to discuss with their students about the results of the questionnaires and what improvements might be possible, the feedback cycles need to be closed.

For the Master's and the PhD programmes

A 3. (ASIIN 4.1) There need to be separate module descriptions for the different courses included in "Research Work". The mentioned length in weeks needs to be aligned with the awarded ECTS points.

For the Master's programmes

A 4. (ASIIN 4.1) The module handbook is not complete; the module description for the course "Research Practice" (IP 6305) is missing and needs to be added.

Recommendations

For all degree programmes

E 1. (ASIIN 1.6) It is recommended to offer Education Roaming (eduroam) at KazNU.

For the Biology programmes

E 2. (ASIIN 3.3) It is recommend to establish a research station as a base for conducting field trips with biology students.

For the Bachelor's programmes

E 3. (ASIIN 1.3) It is recommended to conduct the practical laboratory work in the biochemistry course in several practical sessions and not to have sessions of just two hours every week.

For the Master's programmes

E 4. (ASIIN 1.3) It is recommended to prolong the compulsory course "Research Project" to a minimum length of four to six weeks.

For the Master's degree programme Biology (pedagogical education)

E 5. (ASIIN 1.3) It is recommended to avoid unintended overlaps in the courses' content, especially in the area of the pedagogical courses.

For the PhD programme

E 6. (ASIIN D 6) It is recommended to offer additional financial support to PhD students with a family, so that their expenses during their stays abroad are better covered.

H Comment of the Technical Committees (13.06.2023)

Technical Committee 10 – Life Sciences (12.06.2023)

Assessment and analysis for the award of the ASIIN seal:

The biology programmes are reaccredited, while the genetics and neuroscience programmes are to be accredited for the first time. It is worth mentioning that these are the first and so far only neuroscience programmes in Kazakhstan. After a short discussion, the TC confirms the overall positive impression of the experts and agrees with the proposed requirements and recommendations. The requirements concern the module descriptions and the lack of feedback to the students on the results of the teaching evaluations.

The Technical Committee 10 – Life Sciences recommends the award of the seals as follows:

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditation**
Ba Biology	With requirements for one year	-	30.09.2029
Ma Biology	With requirements for one year	-	30.09.2029
Ma Biology (pedagogical training)	With requirements for one year	-	30.09.2029
Ba Genetics	With requirements for one year	-	30.09.2028
Ma Neuroscience	With requirements for one year	-	30.09.2028
PhD Neuroscience	With requirements for one year	-	30.09.2028

Technical Committee 14 – Medicine (13.06.2023)

Assessment and analysis for the award of the ASIIN seal:

The biology programmes are reaccredited, while the genetics and neuroscience programmes are to be accredited for the first time. It is worth mentioning that these are the first and so far only neuroscience programmes in Kazakhstan. After a short discussion, the TC confirms the overall positive impression of the experts and agrees with the proposed requirements and recommendations. The requirements concern the module descriptions and the lack of feedback to the students on the results of the teaching evaluations. One suggestion is to add the word "satisfaction" to requirement A2 to make it clear that it is about students' teaching evaluations. In addition, slight rewordings of recommendations E4 and E5 are proposed.

The Technical Committee 14 – Medicine recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Genetics	With requirements for one year	-	30.09.2028
Ma Neuroscience	With requirements for one year	-	30.09.2028
PhD Neuroscience	With requirements for one year	-	30.09.2028

Requirements

A 2. (ASIIN 5) Teachers need to discuss with their students about the results of the satisfaction questionnaires and what improvements might be possible, the feedback cycles need to be closed.

Recommendations

For the Master's programmes

E 4. (ASIIN 1.3) It is recommended to prolong the compulsory course "Research Project" to a minimum length of at least four weeks.

For the Master's degree programme Biology (pedagogical education)

E 5. (ASIIN 1.3) It is recommended to introduce a curricular mapping in order to avoid unintended overlaps in the courses' content, especially in the area of the pedagogical courses.

I Decision of the Accreditation Commission (23.06.2023)

Assessment and analysis for the award of the subject-specific ASIIN seal:

The AC discusses the procedure and decides to follow the suggestions of TC 14 to change the wording of recommendations E4 and E5. Additionally, the AC prefers to use "Teaching staff" instead of "Teachers". Otherwise, the AC decides to issue four requirements and six recommendations as proposed by the experts and the TC's.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Biology	With requirements for one year	-	30.09.2029
Ma Biology	With requirements for one year	-	30.09.2029
Ma Biology (pedagogical training)	With requirements for one year	-	30.09.2029
Ba Genetics	With requirements for one year	-	30.09.2028
Ma Neuroscience	With requirements for one year	-	30.09.2028
PhD Neuroscience	With requirements for one year	-	30.09.2028

Requirements

For all degree programmes

A 1. (ASIIN 4.1) The module descriptions need to include information about the students' total workload.

A 2. (ASIIN 5) Teaching staff needs to discuss with their students the results of the satisfaction questionnaires and what improvements might be possible, the feedback cycles need to be closed.

For the Master's and the PhD programmes

A 3. (ASIIN 4.1) There need to be separate module descriptions for the different courses included in “Research Work”. The mentioned length in weeks needs to be aligned with the awarded ECTS points.

For the Master’s programmes

A 4. (ASIIN 4.1) The module handbook is not complete; the module description for the course “Research Practice” (IP 6305) is missing and needs to be added.

Recommendations

For all degree programmes

E 1. (ASIIN 1.6) It is recommended to offer Education Roaming (eduroam) at KazNU.

For the Biology programmes

E 2. (ASIIN 3.3) It is recommend to establish a research station as a base for conducting field trips with biology students.

For the Bachelor’s programmes

E 3. (ASIIN 1.3) It is recommended to conduct the practical laboratory work in the bio-chemistry course in several practical sessions and not to have sessions of just two hours every week.

For the Master’s programmes

E 4. (ASIIN 1.3) It is recommended to prolong the compulsory course “Research Project” to a minimum length of at least four weeks.

For the Master’s degree programme Biology (pedagogical education)

E 5. (ASIIN 1.3) It is recommended to introduce a curricular mapping in order to avoid unintended overlaps in the courses’ content, especially in the area of the pedagogical courses.

For the PhD programme

E 6. (ASIIN D 6) It is recommended to offer additional financial support to PhD students with a family, so that their expenses during their stays abroad are better covered.

Appendix: Programme Learning Outcomes and Curricula

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Biology:

"ON 1. demonstrate ideas about the processes and phenomena occurring in animate and inanimate nature, based on the concept of natural science, their interconnection and interdependence; on the biodiversity of living organisms, the basic laws of evolution and functioning of living systems; about environmental principles of environmental management; about the role of biological laws in solving social problems; about the methods of cognition of nature, which are necessary for solving tasks when performing professional functions;

ON 2. apply knowledge and understanding of the main areas of biological science: in botany, zoology, cytology and histology, anatomy and physiology of humans and animals, biology of individual development, biochemistry, genetics, microbiology, molecular biology, ichthyology, biophysics, ecology when performing professional activities;

ON 3. demonstrate skills in the collection and preparation of scientific materials, processing the results of field and experimental research;

ON 4. master the methods of microscopic, botanical, zoological, biochemical, immunological, neurophysiological, photobiological, chronobiological, embryological, genetic, molecular biological, physiological, biophysical, ecological, etc. Types of biological analysis and practice them in the conditions of scientific research activities;

ON 5. plan and conduct experiments in laboratories of research institutes on biological objects in order to identify the mechanisms of their activity in accordance with international requirements and principles of bioethics;

ON 6. to collect, process, interpret biological material in the field and in the laboratory using biostatistics methods;

ON 7. analyze the scientific literature, write reviews, write abstracts, articles, report and defend the results of research at scientific conferences and public hearings in a reasoned way;

ON 8. assess the quality and safety of biological, genetic, biotechnological, biomedicine products and manufactures obtained for compliance with GLP rules;

ON 9 to carry out diagnostics, examination, monitoring of biological objects in the conditions of biological, biotechnological, biomedicine and chemical laboratories to solve environmental problems, control GMOs;

ON10 master the methods of biochemical, molecular genetic, cytological, histological, biophysical, chronobiological, neurobiological, immunological analysis for use in biomedical practice;

ON11 to take biological material (blood, smear, biopsy, etc.) for diagnostic studies in medical laboratories;

ON12 to be guided by methodological problems arising at the present stage of the development of science; to use individual creative abilities to solve research and innovation tasks and to possess the skills of selecting reliable information for the implementation of professional activities."

The following **curriculum** is presented:

GENERAL EDUCATION DISCIPLINES		CORE DISCIPLINES		MAJOR DISCIPLINES		
OBLIGATORY COMPONENT	ELECTIVE COMPONENT	UNIVERSITY COMPONENT	ELECTIVE COMPONENT	UNIVERSITY COMPONENT	ELECTIVE COMPONENT	
51	5	94	18	36	24	
56		**112**		**60**		
1	Module of social and cultural development & Instrumental module & Module Physical Training 25 ECTS			Aspects of natural sciences 9 ECTS		34
2	Instrumental module & Module Physical training 12 ECTS	Elective component **(1 of 5)** 5 ECTS		Aspects of natural sciences 9 ECTS		26
3	Instrumental module & Module Physical training 7 ECTS	Plant structure & Morphology of humans and animals & Biodiversity of flora and fauna 24 ECTS				31

4	Module of social and cultural development & Module Physical training 7 ECTS	Plant structure & Morphology of humans and animals & 22 ECTS		29
5	Biostatic methods of molecular biology 6 ECTS	Applied problems of biology Ecology and ethics **(1 of 6)** 6 ECTS	Genetics and private physiology 18 ECTS	30
6	Biostatic methods of molecular biology 9 ECTS	Applied problems of biology Ecology and ethics **(2 of 6)** 12 ECTS	Genetics and private physiology 9 ECTS	30
7	Problems of biophysics	Fundamentals of bioresource conservation	General questions of biology Herbs of Kazakhstan Cell pathology and cell technology Biology and ecology of animals Human and plant genetics	36

	6 ECTS	6 ECTS	Physiology and biophysics of living systems **(3 of 18)** 24 ECTS	

8	Professional practice 9 ECTS	Professional (pre-diploma)practice 3 ECTS	**FINAL ATTESTATION** 12 ECTS	24

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master's degree programme Biology:

"ON1 demonstrate systemic fundamental knowledge in the field of general biology, cellular and molecular biology, genetics, microbiology, biochemistry, biophysics, biotechnology when conducting scientific research, developing innovative technologies, including in the educational practice of higher education using information technology;

ON2 to improve the level of scientific biological research through the wide use of modern methods of processing, biometrics and interpretation of scientific data in the field of botany, zoology, cell biology, embryology, molecular biology, bioengineering;

ON3 systematize, develop and plan, critically evaluate scientific research and theories in the field of biology, biotechnology, ecology, medicine, education and solve problems at a professional level;

ON4 to interpret and systematize scientific theories and concepts of modern areas of biology for application in the choice of initial theoretical positions in the creative solution of problem situations in educational, educational, methodological, scientific, industrial activities;

ON5 to implement scientific and scientific and technical programmes and projects in the field of biology and related fields of activity to solve practical problems of medicine, agriculture, ecology, biotechnology;

ON6 to carry out interdisciplinary research in the field of biology, chemistry, physics, ICT, medicine, agriculture to create new drugs, strains of microorganisms, varieties of agricultural plants and animals, GMOs.

ON7 to design and implement comprehensive research based on the scientific worldview, mastered research technologies in the field of biology and biotechnology, using modern computer technology, software products for the implementation of independent biological research.

ON8 build research activities based on the principles of bioethics; guaranteeing the scientific validity of the results, the conservation and protection of biodiversity, human rights and health;

ON9 develop a scheme of experimental stages of semi-production and implement on their basis the technological processes used in the fields of biotechnology and biology;

ON10 review and evaluate scientific products in the field of biology and related fields, such as ecology, medicine, agriculture, biotechnology."

The following **curriculum** is presented:

GENERAL EDUCATION DISCIPLINES		CORE DISCIPLINES		MAJOR DISCIPLINES	
OBLIGATORY COMPONENT	ELECTIVE COMPONENT	UNIVERSITY COMPONENT	ELECTIVE COMPONENT	UNIVERSITY COMPONENT	ELECTIVE COMPONENT
51	5	94	18	36	24
56		**112**		**60**	

TERM

1	Module of social and cultural development & Instrumental module & Module Physical Training 25 ECTS		Aspects of natural sciences 9 ECTS	34
2	Instrumental module & Module Physical training 12 ECTS	Elective component **(1 of 5)** 5 ECTS	Aspects of natural sciences 9 ECTS	26
3	Instrumental module & Module Physical training 7 ECTS	Plant structure & Morphology of humans and animals & Biodiversity of flora and fauna 24 ECTS		31

4	Module of social and cultural development & Module Physical training 7 ECTS	Plant structure & Morphology of humans and animals & 22 ECTS		29
5	Biostatic methods of molecular biology 6 ECTS	Applied problems of biology Ecology and ethics **(1 of 6)** 6 ECTS	Genetics and private physiology 18 ECTS	30
6	Biostatic methods of molecular biology 9 ECTS	Applied problems of biology Ecology and ethics **(2 of 6)** 12 ECTS	Genetics and private physiology 9 ECTS	30
7	Problems of biophysics	Fundamentals of bioresource conservation	General questions of biology Herbs of Kazakhstan Cell pathology and cell technology Biology and ecology of animals	36

	6 ECTS	6 ECTS	Human and plant genetics Physiology and biophysics of living systems **(3 of 18)** 24 ECTS		

8	Professional practice 9 ECTS	Professional (pre-diploma)practice 3 ECTS	**FINAL ATTESTATION** 12 ECTS		24

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master's degree programme Biology (pedagogical training):

"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 the modern pedagogical theories, didactic principles of teaching biology.

ON 3 To use innovative and interactive technologies, methods, tools and forms of organizing the teaching of biological disciplines in education.

ON 4 Organize inclusive learning on Biology for children with health disabilities.

ON 5 Systematically present programmes 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.

ON10 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.

ON11 To carry out in practice the integration of sciences, using data from related sciences for themselves professional purposes.

ON12 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."

The following curriculum is presented:

RESEARCH		CORE DISCIPLINES		MAJOR DISCIPLINES)	
UNIVERSITY COMPONENT	ELECTIVE COMPONENT	UNIVERSITY COMPONENT	ELECTIVE COMPONENT	UNIVERSITY COMPONENT	ELECTIVE COMPONENT
		20	15	31	18
24		**35**		**49**	

TERM

1	M-1 Module of history and philosophy of science / M-2 Psychology and Pedagogy Module 6 ECTS	M3 Basics of the organization of biological education. / M3 Problems of modern biology. 6 ECTS	M4 Scientific and pedagogical methods of research 12 ECTS	**RES.** Master's Student Research (MSR), Including Scientifing Internship And Dissertation Writing 3 ECTS	27
2	M-1 Module of history and philosophy of science / M-2 Psychology and Pedagogy Module	M3 Basics of the organization of biological education. /	M4 Scientific and pedagogical methods of research	**RES.** Master's Student Research (MSR), In-	33

	14 ECTS	M3 Problems of modern biology. 9 ECTS	6 ECTS	cluding Scientifing Internship And Dissertation Writing 4 ECTS	
3	M5 Application of innovative technology in biology 13 ECTS	M6 Integration of disciplines in teaching biology./ M6 Organization and management of educational process. 18 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	

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Genetics:

"ON1. Analyze and describe molecular genetics, biochemical, and morphophysiological phenomena of an organism;

ON2. Explain revealed heredity and variability on the molecular, cellular, and whole-body levels;

ON3. Evaluate genetic variability of the organisms under different environmental factors;

ON4. Carry out experiments with model organisms and test systems to determine genetic regulations;

ON5. Assess the quality and safety of laboratory works using genetic techniques in research and production centers and laboratories in consent with GLP rules and principles of bioethics;

ON6. Apply modern methods of general and molecular genetics in breeding centers to generate highly productive, resistant to unfavourable factors crop cultivars and livestock breeds;

ON7. Imply modern techniques of general and molecular genetics in prenatal centers to provide diagnostics and prophylactics of inherited disorders and laboratories of extracorporeal fertilization (ECF) to solve reproduction problems of the population;

ON8. Use methods of molecular genetic examination in the criminalistics laboratories to identity identification and determination of kinship; custom control of GMOs as in laboratories of sanitary-epidemiological surveillance;

ON9. Perform genetic investigations in field and laboratory conditions using modern equipment and calculation tools for genetic screening of the environment;

ON10. Analyze research and technical information relevant to the topic of research based on modern information technologies;

ON11. Use interactive methods, forms and teaching tools; be able to present teaching material in oral, written, and graphic forms;

ON12. Simulate further career through professional and personal education and plan educational route."

The following curriculum is presented:

GENERAL EDUCATION DISCIPLINES		CORE DISCIPLINES		MAJOR DISCIPLINES	
OBLIGATORY COMPONENT	ELECTIVE COMPONENT	UNIVERSITY COMPONENT	ELECTIVE COMPONENT	UNIVERSITY COMPONENT	ELECTIVE COMPONENT
51	5	94	18	36	24
56		**112**		**60**	

TERM

1	Module of social and cultural development / Instrumental module / Module Physical Training 25 ECTS			Biological and Chemical Module 9 ECTS		34
2	Instrumental module / Module Physical Training 12 ECTS		Elective component **(1 of 6)** 5 ECTS		Biological and Chemical Module 9 ECTS	26
3	Instrumental module / Module Physical Training 7 ECTS		Natural Sciences module / Module of organization levels of organisms / Module of Genetics Basics 24 ECTS			31
4	Module of social and cultural development 7 ECTS		Natural Sciences module / Module of organization levels of organisms / Module of Genetics Basics 22 ECTS			29
5	Genetic Engineering Module 6 ECTS		Module of origin and		Module of determining genetic pathologies 18 ECTS	30

			development of organisms / Module of genetic assessment of the environment 6 ECTS					
6	Genetic Engineering Module 9 ECTS		Module of origin and development of organisms / Module of genetic assessment of the environment 12 ECTS		Module of determining genetic pathologies 12 ECTS			30
7	Human Genetics Module 6 ECTS		Scientific analyses module 6 ECTS		Module of applied genetics / Module of genetic regulation of development 24 ECTS			36
8	Human Genetics Module 9 ECTS		Scientific analyses module 3 ECTS		**FINAL ATTESTATION** 12 ECTS			24

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master's degree programme Neuroscience:

"ON1. Define and integrate interdisciplinary theoretical and methodological concepts in neuroscience, their contradictions and development prospects;

ON2. Estimate the contribution of related disciplines to the understanding of phylogeny and ontogenesis of the nervous system in norm and pathology;

ON3. Define new theoretical and applied issues in neuroscience in relation to the economic and social demands of society and ways to their solving;

ON4. Plan and develop valid experimental studies in neuroscience in relevant research centers and institutions;

ON5. Synthesize the obtained experimental data in the context of a multidisciplinary approach in neuroscience and interpret them in accordance with the requirements of international standards;

ON6. Analyze the validity and efficiency of methodological approaches in applied aspects of neuroscience;

ON7. Develop scripts for automatic analysis of group data using modern software packages;

ON8. Master the academic writing skills for preparation and publication scientific papers in the leading scientific journals;

ON9. Present the results of the own research and participate in scientific discussions with scientists at international conferences, scientific seminars, congresses, and master classes;

ON10. Develop evaluation criteria and target indicators of the effectiveness of neurotechnologies in practice;

ON11. Create modern neurotechnology programmes using an interdisciplinary approach;

ON12. Master the methods of scientific communication in order to broadcast the own ideas and results of studies in neuroscience to the scientific community and other stakeholder communities."

The following curriculum is presented:

RESEARCH		CORE DISCIPLINES		MAJOR DISCIPLINES	
UNIVERSITY COMPONENT	ELECTIVE COMPONENT	UNIVERSITY COMPONENT	ELECTIVE COMPONENT	UNIVERSITY COMPONENT	ELECTIVE COMPONENT
		20	15	31	18
24		**35**		**49**	

TERM

1	History and phil. of science & Psychology and Pedagogy 6 ECTS	Brain evolution and psychoinformatics & Mathematical Neuroscience & Clinical Neuroscience **(1 of 3)** 6 ECTS	Research of functional systems 12 ECTS	**RES.** Master's Student Research (MSR), Including Scientifing Internship And Dissertation Writing 3 ECTS	27

2	History and philosophy of science & Psychology and Pedagogy 14 ECTS	Brain evolution and psychoinformatics & Mathematical Neuroscience & Clinical Neuroscience	Research of functional systems 6 ECTS	**RES.** Master's Student Research (MSR), Including Scientifing Internship	33

		(1 of 3) 9 ECTS		And Dissertation Writing 4 ECTS	
3	Biological principles in Neuroscience 13 ECTS	Cognitive Neuroscience Clinical neuroscience Computational neuroscience **(1 of 3)** 18 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

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the PhD programme Neuroscience:

"ON1. Evaluate and consolidate scientific concepts and methodologies of experimentation in neuroscience, contributing to the development of new relevant scientific research in neuroscience;

ON2. Conduct a critical analysis of modern world scientific research in the field of neuroscience in order to implement and adapt scientific projects into local conditions;

ON3. Develop own original research based on the synthesis and transformation of the world scientific experience and create successful research projects in neuroscience on the international scientific level;

ON4. Critically evaluate research initiatives in the field of neuroscience and identify research projects that are most valuable for the development of specific socio-economic areas;

ON5. Systematize and implement into the scientific experiments the international standards for ethics in human and animal studies. Predict the socio-economic consequences of scientific research in neuroscience and be responsible for them;

ON6. Carry out research at a highly qualified level with the use of innovative technologies, the results of which meet the requirements of highly rated scientific journals;

ON7. Exhibit publishing activity in highly rated scientific journals and issuance, to actively participate in the peer review of scientific articles at the international level;

ON8. Create a patentable innovative scientific product in the field of neuroscience and acquire intellectual property copyrights;

ON9. Establish and maintain a constructive relationship with the international scientific community in order to carry out a fruitful exchange of achievements in neuroscience;

ON10. Implement scientific achievements into the practice, commercialize scientific ideas and achievements in neuroscience, attracting stakeholder consumers from the various sectors of the economy;

ON11. Implement modern scientific knowledge and achievements in author's educational programmes and integrated courses based on new educational platforms;

ON12. Organize and conduct relevant expert assessments in the fields of neuroscience and education."

The following curriculum is presented:

RESEARCH			CORE DISCIPLINES		MAJOR DISCIPLINES	
UNIV. COMP.	RESEARCH SEMINAR	DOCTORAL THESIS	UNIVERSITY COMPONENT	ELECTIVE COMPONENT	UNIVERSITY COMPONENT	ELECTIVE COMPONENT
31	33	59	15	5	20	5
123			20		25	

TERM

1	Instruments of scientific researches 5 ECTS	Elective component **(1 of 4)** 5 ECTS	Advanced Neuroscience 10 ECTS	Neuroscience **(1 of 6)** 5 ECTS	Res. Sem. 3 ECTS	Doc. Thes. 2 ECTS	30
2	Teaching intership 10 ECTS	Research Seminar 8 ECTS	Doctoral Thesis 12 ECTS				30
3	Research practice 5 ECTS	Research Seminar 8 ECTS	Doctoral Thesis 14 ECTS	Sci. Conf. 3 ECTS			30
4	Research practice 5 ECTS	Research Seminar 10 ECTS	Doctoral Thesis 15 ECTS				30
5	Res. Sem. 3 ECTS	Doctoral Thesis 14 ECTS	Scientific conferences (Participation) Scientific Internship 13 ECTS				30
6	RS 1	DT 2	Publication of the main scientific results of the dissertation in scientific journals 15 ECTS	FINAL ATTESTATION 12 ECTS			30