



ASIIN Seal

Accreditation Report

Bachelor's Degree Programmes

Ba Biology

Ba Biology (pedagogic)

Ba Chemistry

Ba Chemistry (pedagogic)

Master's Degree Programmes

Ma Biology

Ma Biology (pedagogic)

Ma Chemistry

Ma Chemistry (pedagogic)

Provided by

Al-Farabi Kazakh National University

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A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC) ¹
Бакалавр естественных наук по специальности “Биология”	Bachelor of natural sciences in Biology	ASIIN	/	10
Бакалавр педагогических наук по специальности “Биология”	Bachelor of pedagogic sciences in Biology	ASIIN	/	10
Магистр естественных наук по специальности “Биология”	Master of natural sciences in Biology	ASIIN	/	10
Магистр педагогических наук по специальности “Биология”	Master of pedagogic sciences in Biology	ASIIN	/	10
Бакалавр естественных наук по специальности “Химия”	Bachelor of natural sciences in Chemistry	ASIIN	/	09
Бакалавр педагогических наук по специальности “Химия”	Bachelor of pedagogic sciences in Chemistry	ASIIN	/	09
Магистр естественных наук по специальности “Химия”	Master of natural sciences in Chemistry	ASIIN	/	09
Магистр педагогических наук по специальности “Химия”	Master of pedagogic sciences in Chemistry	ASIIN	/	09
<p>Date of the contract: 26.01.2016</p> <p>Submission of the final version of the self-assessment report: 17.10.2016</p> <p>Date of the onsite visit: 13. and 14. December 2016</p> <p>at: Al-Farabi Kazakh National University, Faculty of Biology and Biotechnology and Faculty of Chemistry and Chemical Technology</p>				

¹ TC: Technical Committee for the following subject areas: TC 09 – Chemistry; TC 10 – Life Sciences; TC 11 – Geosciences.

Peer panel:

Yekaterina Astafyeva, M. Sc., M.Auezov South Kazakhstan State University, Shymkent;

Prof. Dr. Martin Jäger, University of Applied Sciences Niederrhein ;

Prof. Dr. Dirk Krüger, Freie Universität Berlin;

Prof. Dr. Heinrich Lang, Technische Universität Chemnitz;

PD. Dr. Alois Palmetshofer, University of Würzburg;

Prof. Dr. Sibylle Planitz-Penno, University of Applied Sciences Recklinghausen;

Kamilla Shalabayeva , Student, Miras University Shymkent.

Representative of the ASIIN headquarter: Dr. Thomas Lichtenberg

Responsible decision-making committee: Accreditation Commission for Degree Programmes

Criteria used:

European Standards and Guidelines as of 15.05.2015

ASIIN General Criteria, as of 10.03.2015

Subject-Specific Criteria of Technical Committee 09 – Chemistry as of 12.12.2011

Subject-Specific Criteria of Technical Committee 10 – Life Sciences as of 09.12.2011

B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF ²	d) Mode of Study	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Ba Biology	Bachelor of natural sciences	Individual educational trajectories: - Biological diversity and cellular biology - Applied aspects of biochemistry and microbiology - Genetics and Molecular biology - Physiology and biophysics	Level 6	Full time	8 Semester	240 ECTS	No information
Ba Biology (pedagogic)	Bachelor of pedagogic sciences	Individual educational trajectories: - Biophysics and Physiology	Level 6	Full time	8 Semester	240 ECTS	Fall Semester / Fall Semester 2010 (licence renewed)
Ma Biology	Master of natural sciences	Individual educational trajectories: - Diversity of living organisms - Cellular biology, histology and embryology - Genetics and Molecular biology - Physiology and biophysics - Applied Biochemistry	Level 7	Full time	4 Semester	120 ECTS	Fall Semester / Fall Semester 2010 (licence renewed)
Ma Biology (pedagogic)	Master of pedagogic sciences	Individual educational trajectories: - Individual Educational Path - Applied Biophysics and Applied Physiology	Level 7	Full time	4 Semester	120 ECTS	Fall Semester / Fall Semester 2010 (licence renewed)
Ba Chemistry	Bachelor of natural sciences	Individual educational trajectories: - Theoretical and applied chemistry - Chemical examination - Chemistry of nanomaterials	Level 6	Full time	8 Semester	240 ECTS	No information
Ba Chemistry (pedagogic)	Bachelor of pedagogic sciences	Individual educational trajectories: - Chemistry and Education	Level 6	Full time	8 Semester	240 ECTS	No information

² EQF = The European Qualifications Framework for lifelong learning

B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF ²	d) Mode of Study	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Ma Chemistry	Master of natural sciences	Individual educational trajectories: - Analytical chemistry and chemistry of rare elements - Inorganic chemistry and chemical physics - Thermodynamics and catalytic processes - Colloid and organic chemistry - Drug chemistry and polymer chemistry	Level 7	Full time	4 Semester	120 ECTS	No information
Ma Chemistry (pedagogic)	Master of pedagogic sciences in Chemistry	Individual educational trajectories: - Chemistry and Education	Level 7	Full time	4 Semester	120 ECTS	No information

For the Bachelor's degree programme Biology the institution has presented the following profile on the website:

“The purpose of the educational program is to form basic knowledge which are necessary for mastering of professional disciplines; the formation of theoretical and practical knowledge and skills needed to implement them in their professional activities; formation of human, social and personal values of the graduate; formation of ecological, ethical, legal culture, the culture of thinking and preparation of highly qualified specialists, capable to adapt in the changing conditions of education and science at the state level and the international community, to continue learning throughout life.

The objectives of the educational program - providing the professional knowledge and practical skills in the field of biology and provide students the choice of individual programs in the field of education; providing basic knowledge of the natural and scientific, general technical and economic considerations, as a foundation for professional education.”

For the Bachelor's degree programme Biology (pedagogic) the institution has presented the following profile in the self-assessment report:

“The purpose and results: The purpose of teaching disciplines: to acquaint students with modern trends of development of continuous biological education, methodological problems, structure, content and methodology of Biology education.

Objectives:

- stand the foundations of a scientific and practical knowledge for the discipline, to the understanding of basic theoretical and practical development of Biology education;
- create methodological skills, ensure the transformation of primary vocational-pedagogical skills in competences;
- teach students to study State-of-the-methodic science, advanced pedagogical experience, new technologies of teaching biology.
- to develop educational consciousness and professionally meaningful qualities of biology teachers, professional culture, creative thinking, individual style and research approach to professional activities, the need for continuous self-improvement and self-education of teachers.”

For the Master’s degree programme Biology the institution has presented the following profile on the website:

„Aim of programme:

Preparation of master course students to conducting of scientific researches, improving and developing of theories and methods of biological processes; to practical application of obtained knowledge in different areas of economics (industry, medicine, agriculture, education) related to taxonomic identification of flora and fauna, cytological, histological, genetical, microbiological, immunological, biophysical methods of analysis in various scientific areas, improving and developing of innovative technological processes being applied in industrial areas.

Professional activity Master of biological sciences, master of environmental biological monitoring, master-embryologist, master-histologist, master-zoologist; master-botanist, master-cytologist, master-biophysicist, master-genetics, master-microbiologist, master-biochemist, master of molecular biology, master of specific biodiversity of living universe, master-physiologist.“

For the Master’s degree programme Biology (pedagogic) the institution has presented the following profile in the self-assessment report:

“PROFILE AND EDUCATIONAL OBJECTIVES:

- Provide training in biology at the highest academic standards in a competitive educational environment, attractive to the best students from Kazakhstan and other countries.
- To provide students a systematic knowledge of the fundamental courses of biology, based on a solid experimental and theoretical basis, along with the knowledge of the elective areas, based on the latest biological and pedagogical sciences.
- Development of system skills related to problem solving, critical evaluation and interpretation of the original experimental data.
- Development by the end of training students' ability to make a confident choice for future professional activities, and to successfully find employment in their chosen field.
- Graduates should acquire in-depth knowledge of modern biophysics, physiology and chronobiology, the morphology of humans and animals, as well as to be able to carry out a critical analysis of the state of current research in the field of biology.
- Graduates must complete a major research project, which requires the possession of the theory and methods of staging and biophysical, physiological and morphological studies and experiments that provide original result and the novelty of the research.
- Graduates should be prepared to learn for a degree in any leading university in Kazakhstan or other countries, or for a professional career related to the conduct of research in the sectors of industry, based on the application of biological knowledge and pedagogical work in higher education institutions of Kazakhstan or abroad."

For the Bachelor's degree programme Chemistry the institution has presented the following profile on the website:

"Profile subject: Chemistry

Purpose and results of training:

The purpose of the educational program - Preparation of highly qualified specialists of chemists and researchers with knowledge and competences in demand for work in the chemical and adjacent industry sectors, as well as scientific research institutes, laboratories chemical profile."

For the Bachelor's degree programme Chemistry (pedagogic) the institution has presented the following profile in the self-assessment report:

"Students will have developed an in-depth understanding of a complex body of knowledge including some knowledge at the forefront of the scientific discipline being studied. They will be able to evaluate evidence, alternative viewpoints and assumptions in order to draw conclusions and to communicate their findings effectively. Graduates will possess the ability to exercise personal responsibility for decisions made based on complex information. Also programme graduates must become highly-qualified chemistry specialists, who will know theoretical and practical basics of inorganic, analytic, organic, and physical chemistry, chemical technology, physical methods of research, quantum mechanics and computer chemistry, as well as have profound knowledge about one of the narrower fields of chemistry, and modern methods of scientific research; graduates must possess fundamental social and humanitarian knowledge that will improve their general intelligence and help them master humanitarian culture of thinking, literate and developed talks, as well as effective labour management skills, and be familiar with basics of law; graduates must develop their creative potential, initiative and innovation to ensure their competitiveness at the labour market, and strive for furthering education and improving professional competence."

For the Master's degree programme Chemistry the institution has presented the following profile on the website:

"Purpose and results of learning:

The purpose of the educational program - provide training Masters in speciality "chemistry" in accordance with existing international standards and requirements of the quality of training in a competitive and stimulating educational environment. Create the necessary conditions of compliance training in the chemical content of the educational program "research chemistry" by common quality criteria. To promote the creation of a competitive and attractive educational society in order to attract to studying in "research chemistry" best applicants from countries near and far abroad."

For the Master's degree programme Chemistry (pedagogic) the institution has presented the following profile on the website:

"PROFILE AND EDUCATIONAL OBJECTIVES

configure the system

B Characteristics of the Degree Programmes

- Knowledge of the nature, society and thought;
- Intellectual and experimental skills;
- The experience of creative relations;
- Experience of emotionally-value relations,

which is an integrative form is a set of basic and professional competence to continue their studies in the profile or academic doctorate in chemistry and teaching professions or work on teaching or equivalent positions in the education system of the Republic of Kazakhstan or abroad, successfully competing in the labour market.”

C Peer Report for the ASIIN Seal³

1. The Degree Programme: Concept, content & implementation

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

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 1.
- Programme objectives and learning outcomes as defined on the websites:
 - Ba Biology: http://www.kaznu.kz/en/education_programs/bachelor/speciality/721 (accessed 20.12.2016)
 - Ba Biology (pedagogic): no specific website available
 - Ma Biology:
http://www.kaznu.kz/en/education_programs/magistracy/speciality/878 (accessed 20.12.2016)
 - Ma Biology (pedagogic)
http://www.kaznu.kz/en/education_programs/magistracy/speciality/994# (accessed 20.12.2016)
 - Ba Chemistry:
http://www.kaznu.kz/en/education_programs/bachelor/speciality/726 (accessed 20.12.2016)
 - Ba Chemistry (pedagogic):
http://www.kaznu.kz/en/education_programs/bachelor/speciality/725 (accessed 20.12.2016) - *however, website does not contain any information!*
 - Ma Chemistry:
http://www.kaznu.kz/en/education_programs/magistracy/speciality/874 (accessed 20.12.2016)

³ This part of the report applies also for the assessment for the European subject-specific labels. After the conclusion of the procedure, the stated requirements and/or recommendations and the deadlines are equally valid for the ASIIN seal as well as for the sought subject-specific label.

- Ma Chemistry (pedagogic):
http://www.kaznu.kz/en/education_programs/magistracy/speciality/578 (accessed 20.12.2016)
- **Appendix 6** for each degree programme: Diploma supplements; § 4.3 provides detailed and subject specific information on the degree programmes
- Discussions with Al-Farabi management, students, business representatives and teaching staff

Preliminary assessment and analysis of the peers:

The Al-Farabi Kazakh National University seeks accreditation for the Bachelor and Master programmes in Biology and Chemistry as well as for the Bachelor and Master programmes of Pedagogic Sciences in Biology and Chemistry. The peers welcomed that each degree programme had its own English website except for the Ba Biology (pedagogic) and the Ba Chemistry (pedagogic); the peers underlined that subject specific websites need to be published for all degree programmes. In addition, the peers also noted positively that under § 4.3 (Programme Competence) a brief description of the programme objectives and intended learning outcomes is presented. Contrary to the description in the self-assessment report which provided an abundant and difficult to understand compilation of learning outcomes, the learning objectives on the websites as well as in the Diploma Supplements are concise and specific. However, the versions in the Diploma Supplements and on the websites deviate from each other which makes it difficult for interested stakeholders to judge which of the versions is legally binding. The peers recommended harmonizing the learning outcomes in all subject-specific documents.

The peers referred to the **Subject-Specific Criteria (SSC)** of the *Technical Committee Life Sciences* and the *Technical Committee Chemistry* as a basis for judging whether the intended learning outcomes of the Bachelor and the Master programmes as defined by Al-Farabi Kazakh National University correspond to the exemplary constituted learning outcomes of these Technical Committees. The auditors examined the areas of competence as set forth by the SSC and came to the following conclusions:

Looking at the programme objectives of the Bachelor's Degree Programme Biology, the peers confirmed that the brief and concise description of the objectives as presented on the subject specific website outlines the core objectives in a clear and concise manner. Analyzing the "Programme Competences" as described in the Diploma Supplement of the Bachelor programme, the peers understood that the students shall obtain fundamental biology-relevant knowledge like "basic general knowledge of the common zoology and botany, cell and molecular biology, histology and anatomy, physiology and biochemistry, genetics and evolutionary theory as well in pedagogy". The peers comprehended that this

also includes mathematics as they could see from the mandatory curriculum. Furthermore, the peers could see the goal to develop methodological competences as the students shall be competent in “mastering professional equipment – skills in microscopy, chromatography, spectroscopy, centrifugal separation, DNA and RNA polymerization etc.” When it comes to the ability to carry out practical work in labs and outdoors as required by the subject specific criteria, the peers noted that students shall have the “ability to use special equipment and mastering work safety in laboratory” as well as “to design, carry out and analyze scientific research on given theme”. The peers pointed out that the practical competences should have a stronger emphasis particularly with regard to the fact that both laboratories and equipment to enable appropriate laboratory related work by the students need to be provided. The objectives also state that students shall become familiar with “safety standards for laboratory work, the methods limitations and appropriate application” as well as “social and cultural values, and legal regulations” which is an indication to the peers that safety issues are being considered. However, the peers are missing a clear indication of the consideration of “bioethical aspects including biosafety, biosecurity and environmental issues” which are mentioned in the subject-specific criteria and are crucial for the overall awareness of students and the consequences of their actions. The peers strongly recommended to include bioethical safety and environmental issues in the learning outcomes. The peers could see the implication of problem-solving competences in the objective of the “ability to work and act independently guided by self experience and in a group with regard to others opinion”; however, the peers emphasized that subject-relevant as well as life science problem-solving is a key competence which should be highlighted more clearly in the learning outcomes. With regard to the social competences, the students shall develop “skills in critical thinking and comprehension of social and cultural reality.” The communication and presentation skills shall be developed in a way that students can “master oral and writing foreign language at the level sufficient for good educational, research and social communication” and “can prepare scientific publications, presentations, to debate and defend scientific work”. Looking at competences in the field of life-long learning students shall “cultivate eagerness to self-study, acquisition of new skills using educational and IT technologies”. Finally the students shall be able to work “in a group with regard to others opinion”. The peers concluded that the social competences are well defined and in line with the subject specific criteria of ASIIN. The peers noted that some “generic” and some “general” objectives are identical in the Diploma Supplement. The peers underlined that duplication of objectives should be avoided.

When analyzing the learning objectives of the Bachelor Biology with a pedagogic direction (the term “educational” would be more appropriate in the title of the programme) the

peers noticed that they are formulated in a completely different way compared to the Bachelor Biology. The peers welcomed that biology relevant knowledge was aimed for in the objective that students “know the current trends in biology and biology (teaching)” and are “able to explain the basic knowledge of the basic biological sciences and to know the history of its development”. This includes also competences in mathematics as the peers could see from the curriculum where one module in “professional Mathematics” is required. The students shall also obtain methodological competences as the peers comprehended from the objective that students shall “be able to assess the methodological approaches to carry out their critical analysis and if necessary, propose new hypotheses”. Contrary to the Bachelor in Biology, in this programme problem solving competences play a prominent role. The students shall “demonstrate a systematic and creative approach to solving complex problems and be able to make informed conclusions in the absence of complete data”. With regard to the practical application of the theoretical knowledge the peers understood that graduates shall be “able to find the original application of existing knowledge, along with a practical understanding of how the existing methods of research and analysis applies in the relevant science to create and interpret new knowledge”; additionally, the students shall “have the skills to carry out research or teaching of biological sciences in secondary schools, lyceum and colleges”. The peers could see that the technical competences as defined by the subject-specific criteria of ASIIN are well covered; however, the peers could not see any objective considering competences in the field of didactics and teaching methodology. More specifically, it needs to be clear what the pupils are supposed to learn which means that the teachers need to develop a notion how these competences can be developed⁴. Given that the educational track educates future teachers, competences in these fields are crucial as the peers underlined; hence, the learning outcomes need to be revised accordingly. Social competences are properly covered as the peers understood as students shall “develop and deepen their knowledge and acquire new skills in a professional manner” and “be able to make informed judgments in the absence of complete data and clearly state their conclusion, both for professionals and for audiences that do not have adequate training”.

The peers noted that the learning objectives of the Master in Biology are to a large extent identical with those of the Bachelor programme. When looking at the core subjects of biology, the peers confirmed that “knowledge of the common zoology and botany, cell and molecular biology, histology and anatomy, physiology and biochemistry, genetics and evolutionary theory as well in pedagogy” as well as “knowledge of anatomy, physiology, biochemistry, genetics and molecular biology of modern plants and animals” shall be obtained; however, the peers underlined that it must be clear that in a Master programme

⁴ For example, NGSS (next generation science standards) <http://www.nextgenscience.org/>

“advanced knowledge” is aimed for. With regard to competences to discuss complex life science issues as well as own research results comprehensively, the peers understood that students shall be able to “design, carry out and analyze scientific research on a given theme in one’s own language and in the second language”. The peers agreed that this objective emphasizes the research competence of graduates; however, the very same objective is formulated for the bachelor programme. The peers pointed out that the differentiation between a bachelor and a master programme must become evident in the learning objectives. Hence, the peers concluded that the students in a master programme should be able to conduct research on complex projects to highlight that more advanced competences shall be acquired in this programme. Like in the Bachelor programme, problem solving competences are not mentioned for the Master programme either. The peers underlined that this needs to be amended. The peers welcomed that students shall be able “to prepare scientific publications, presentations, to debate and defend scientific work”. With regard to social skills the students shall be “mastering oral and writing foreign language at the level sufficient for good educational, research and social communication”. Furthermore, the students shall have “an idea of modern scientism and tendencies of its changing, skills in critical thinking and comprehension of social and cultural reality”. However, graduates of a master programme should also have leadership skills which are not being mentioned in the learning objectives at all; this needs also to be adopted as the peers pointed out. In summary, the peers stressed that the different levels of competences between a bachelor degree and a master degree must become evident; the fact that the learning objectives are identical to a large extent is not acceptable as it implies that there is hardly any difference in the level of education.

The peers understood that competences for the educational Bachelor and the educational Master are identical to a large extent. It does not become clear which additional competences Master graduates are supposed to achieve compared to those of a Bachelor graduate. When looking at the core competences of natural sciences, “graduates of the Master Biology (pedagogic) should acquire in-depth knowledge of modern biophysics, physiology and chronobiology, the morphology of humans and animals, as well as to be able to carry out a critical analysis of the state of current research in the field of biology”. The peers confirmed that this was in line with the expectations of a Master programme. The peers also comprehended that the graduates need to implement a more complex scientific research work as it is stated in the learning objective: “Graduates must complete a major research project, which requires the possession of the theory and methods of staging and biophysical, physiological and morphological studies and experiments that provide original result and the novelty of the research”. The peers could also see that more complex problem solving competences shall be achieved as indicated in this learn-

ing objective: “have in-depth knowledge of the system and be able to critically evaluate the problems, approaches and trends that reflect the current state of biological science, research and the scope of professional practice” or “demonstrate a systematic and creative approach to solving complex problems”. Additionally, graduates shall be able “to work with the special literature, writing research papers, give talks, and participate freely in discussions”. The social competences include objectives like “have sufficient knowledge in the field of psychology and sociology, providing the opportunity to work in a team and, if necessary, to guide them” which includes leadership skills or “have a view of the modern achievements of science on society, history, spiritual and material culture, philosophy and methodology of scientific work, to freely navigate in a foreign environment and to conduct professional activities in a foreign language”. In summary, the peers confirmed that the learning objectives were of good quality and corresponded fully with the examples as provide in the subject-specific criteria of ASIIN. However, this is a Master of Pedagogic Sciences and the only reference made to educational concerns is that students shall be able to “to conduct a teaching job”. The peers pointed out that this is not sufficient for a Master in Pedagogic Science. The learning objectives need to include a clear focus on didactical and educational theories, methodologies and applications; hence, this needs to be added to the learning outcomes.

The learning objectives of the Diploma Supplement of the Bachelor in Chemistry indicate that students shall “have general knowledge of the foundations and history of mathematics, natural sciences and technology, in particular those of their own discipline” which makes the peers understand that chemistry-relevant fundamental knowledge of mathematics and the natural sciences shall be obtained. When looking at the more chemistry related core subjects like inorganic, organic and physical chemistry, as well as of analytical chemistry the peers noted that none of these components are mentioned in the learning objectives. In fact, the peers gained the impression that the learning objectives have been formulated in a quite generic way and could easily be used for related degree programmes too. Hence, the peers underlined that the subject-specific core competences need to become more evident in the learning outcomes. The practical chemistry work as well as the methodological competence is covered in objectives like the “the ability to plan and devise laboratory experiments ranging from simple tests to advanced projects”, “the ability to interpret and report results obtained from laboratory observations and measurement and relate them to underlying theory”, “conduct with accuracy and precision a range of standard and advanced laboratory techniques and obtain the results thereof” or “systematically and accurately obtain and record measurements and observations during experimentation” as the peers confirmed. The objective to “operate safely and efficiently a selection of standard and advanced scientific instrumentation” indicates

that an awareness with regard to safety issues shall be developed; however, environmental issues are not covered and still need to be added to the learning objectives as the peers pointed out. Furthermore, the peers appreciated that graduates shall be able “to interpret and report results obtained from laboratory observations and measurement and relate them to underlying theory”. The peers also acknowledged that problem solving skills shall be developed as the students shall develop “problem solving skills, both qualitative and quantitative including those where evaluation is required on the basis of limited information”. Finally, the peers also confirmed that social skills shall be obtained as the students develop “time-management and organisational skills” as well as “Communication skills, both written and oral”. However, the peers underlined that also group working competences should be developed as this is an important asset for the labour market.

Analysing the programme objectives and learning outcomes of the Bachelor of Education in Chemistry, the peers noted that the aims are exactly the same like for the Bachelor of Chemistry. The peers admitted that this makes sense to a certain extent as the basics for a fundamental Bachelor in Chemistry and a Bachelor of Education in Chemistry have a lot of similarities. Therefore the peers concluded that this is acceptable; however, the shortcomings as outlined for the Bachelor of Chemistry do also apply to the Bachelor of Education in Chemistry, namely the core subjects of chemistry need to be specified more clearly, environmental issues need to be outlined and skills to work in groups should be included. In addition, the peers pointed out that the specific features of the Bachelor of Education need to become transparent in the learning outcomes. It must become clear that the graduate in the Bachelor of Education needs less research competences and more educational competences with regard to respective learning theories (e.g. constructivism), methodologies and practical educational application. This needs to be elaborated in the learning outcomes of the Bachelor of Education as the peers emphasized.

The Diploma Supplement of the Master of Chemistry states that students shall be able to “understand and apply the principles of Chemistry sciences” and have “knowledge of basics of Chemistry sciences”. The peers pointed out that in a Master programme deepened knowledge in the core and special subjects of Chemistry should to be acquired; “basics and principles” shall have been obtained in the bachelor degree already. Hence, the peers underlined that the learning objectives need to be adapted accordingly. The objective to develop the “ability to enrich scientific hypothesis and skills to do editing and to report a coherent discussion of evidence and facts based on gathering, verification and distribution” and be able to “conduct research and evaluate information by methods appropriate to the communications professions in which they work” is an indication to the peers that the students shall be able to carry out research projects individually. This is further underpinned by the objective to develop “knowledge of how to publish the paper to over-

view periodicals, make reviews, and improve quality of papers; conduct a review/analysis of scientific hypothesis, to assess, navigate the information space; analyze, synthesize and structure the information's of own area; preparation of scientific work to foreign and national scientific journals". The peers comprehended that research competences are one of the focal areas in this programme. Problem solving competences shall be acquired as described in the objective that the students shall "be able to leverage their knowledge and skills in order to solve new problems that appear in an unfamiliar and pluridisciplinary context". However, the peers are lacking a clear objective that mentions the employability of graduates in their field of profession and along with this the practical competences that prepare the graduates for the challenges of the labour market. The peers pointed out that the link to employability and the labour market should be highlighted more clearly in the learning outcomes. Looking at the social competences the peers comprehended that a wide set of qualifications is aimed for covering aspects like "Critical and self-critical abilities:", "written and oral communication in one's own language", "ability to work autonomously, taking initiatives and managing time" and the "ability to work with others in a multidisciplinary multi-national setting". The peers confirmed that the social skills are properly covered.

The peers noted that the learning objectives of the Master of Education of Chemistry differ from the Master of Chemistry. The peers could see clearly that the students shall "have in-depth knowledge of several current topics within their own discipline" and shall be "familiar with the quantitative character of the fields of mathematics and natural sciences and have an understanding of the methods used in these fields, and particularly within their own discipline, including computer-aided methods". The peers confirmed that deepened knowledge in the relevant core topics of Chemistry shall be obtained. Even though profound research competences are not mentioned explicitly, the peers could see from a number of connected skills like "the ability to summarise, evaluate and synthesise information and data from experimental and reference sources", "the ability to plan and devise laboratory experiments ranging from simple tests to advanced projects", "the ability to interpret and reports results obtained from laboratory observations and measurement and relate them to underlying theory" and "to conduct with accuracy and precision a range of standard and advanced laboratory techniques and obtain the results thereof" that research competences shall be obtained. The peers also confirmed that problem solving competences shall be acquired as the graduates shall have the "the ability to apply chemical knowledge and understanding to the solution of qualitative and quantitative problems" and "the ability to recognise, and analyse novel problems and plan and implement strategies for their solution". With regard to the educational focus of the Master programme the peers could see that graduates shall be prepared for their future profes-

sion as the students shall be able to “find the most appropriate way to transfer knowledge to students and pupils, depending on background level of them”. Also skills like “instruction/supervision/teaching/coaching” and the competence that “the graduate passes on his own knowledge and skills at request (by demonstrating and explaining)” contribute to qualifying the students professionally. The students shall also develop social skills like “time-management and organisational skills”, “prepare questionnaires and tasks”, “evaluate knowledge level of pupils and students” and “increase interest of pupils and students in studying of chemistry”. In general, the peers concluded that the learning objectives are in line with the subject specific criteria of ASIIN and also educational and didactical methods play a role in the study programmes but the peers underlined that especially the educational and didactical theories, methodologies and practical applications should be highlighted even further.

All in all the peers concluded that all degree programmes made reference to the subject specific criteria of ASIIN and are widely in line with the exemplary learning objectives as defined by the subject specific criteria. However, the peers underlined that all degree programmes under review could be further improved taking the comments in the previous sections into account.

Staff members, alumni as well as business partners confirmed that there were close links between the AL-Farabi Kazakh National University and the labour market. The peers noted that most of the business partners that collaborated with the University worked for public entities; notwithstanding, this is the core labour market for graduates as the peers were aware. Business partners and university staff members co-operated regularly in a number of research projects where students are involved in different ways like internships or final theses. The „Scientific and Methodological Council” of the University is a collegial consultative advisory unit for the discussion of scientific and methodological issues and training activities of the University. The Scientific and Methodological Council maintains advisory board in close cooperation with business representatives and alumni who give concise and systematic feedback on the quality of degree programmes and make recommendations for further improvement. The peers concluded that external stakeholders are systematically included in the further development of degree programmes.

Criterion 1.2 Name of the degree programme

Evidence:

- Websites of the degree programmes
- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D.

Preliminary assessment and analysis of the peers:

The peers discussed the names of all degree programmes and confirmed that the names reflect the programme objectives and intended learning outcomes appropriately. The peers welcomed that many degree programmes can be studied in Russian, Kazakh or English; this does not apply for the educational programmes.

Criterion 1.3 Curriculum

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 1.
- Appendix 1 - Objectives-Module-Matrix – available for all degree programmes under accreditation
- Appendix 5 – Module Handbooks for all degree programmes
- Subject specific websites:
 - Ba Biology: http://www.kaznu.kz/en/education_programs/bachelor/speciality/721 (accessed 20.12.2016)
 - Ba Biology (pedagogic): no specific website available
 - Ma Biology: http://www.kaznu.kz/en/education_programs/magistracy/speciality/878 (accessed 20.12.2016)
 - Ma Biology (pedagogic) http://www.kaznu.kz/en/education_programs/magistracy/speciality/994# (accessed 20.12.2016)
 - Ba Chemistry: http://www.kaznu.kz/en/education_programs/bachelor/speciality/726 (accessed 20.12.2016)

- Ba Chemistry (pedagogic):
http://www.kaznu.kz/en/education_programs/bachelor/speciality/725 (accessed 20.12.2016) - *however, website does not contain any information!*
- Ma Chemistry:
http://www.kaznu.kz/en/education_programs/magistracy/speciality/874 (accessed 20.12.2016)
- Ma Chemistry (pedagogic):
http://www.kaznu.kz/en/education_programs/magistracy/speciality/578 (accessed 20.12.2016)
- Discussions with Al-Farabi management, students, business representatives and teaching staff

Preliminary assessment and analysis of the peers:

The peers welcomed that for most study programmes, subject specific websites are available. Only the website for the Bachelor of Education in Biology is missing and the website of the Bachelor for Education in Chemistry does not provide any useful information. The websites of the other programmes provide information about the learning objectives and the mandatory as well as the elective disciplines and professional modules. However, the list of courses only contains a brief summary of the modules and several modules are not described at all. In terms of transparency, the peers strongly advise Al-Farabi Kazakh National University to provide more details about the study programmes on the websites to give external stakeholders an opportunity to find all relevant information.

The peers learned that the content of educational programmes in Kazakhstan is defined to a large extent by a directive of the Ministry of Education, the so-called “Standards for Bachelor and Master Programmes” (GOSO) and other regulations which build a normative framework for designing programmes at the universities in Kazakhstan. Nevertheless, Al-Farabi Kazakh National University states that through its status of an “autonomous university” it has acquired the right to develop innovative educational programmes which can deviate from the GOSO.

Regarding the teaching language the peers learned that students can choose between three study groups, Kazakh, Russian, and English; depending on the main language they chose. A distinct percentage (50, 30, 20) of the course contents for the respective groups are to be held in all languages. The peers welcomed this resource consuming offer of languages as it shows that all students with their respective cultural and language background are treated equally and can to a large extent study in their mother tongue. At the same time, all students are also exposed to the other languages to some extent.

The structure of the Bachelor curriculum follows the same general design for all programmes. It contains around 45 courses being divided into the state compulsory modules, elective disciplines and professional courses. The same applies to the Master programmes which follow a structure of three columns, State Compulsory, Compulsory Professional and Elective Professional Modules. As outlined under criterion 1.1, the auditors could see that the intended learning outcomes are, with some limitations, in line with the Subject-Specific Criteria (SSC) of the Technical Committees “Chemistry” as well as “Life Sciences”. The peers based their assessment as to whether the curricula of the different degree programmes are designed in a way to achieve the intended learning outcomes according to the module descriptions and the Objectives-Module-Matrix. The Objectives-Module-Matrices make reference to the SSC of ASIIN, the learning objectives of the degree programmes of Al-Farabi Kazakh National University and the corresponding modules. The peers came to the following conclusions:

The peers could understand that the state compulsory courses (History of Kazakhstan (State exam), Professionally-Oriented Kazakh (Russian) Language, Professionally-Oriented Foreign Language), the “Social and Communicative Modules” (e.g. “Psychology of Interpersonal Communication”, “Theoretical and Applied Political Science”, “Ethics of Personal and Social Success”, “Human Life Safety” or “Ecology and Sustainable Development” as well as the so-called interdisciplinary modules like e.g. “Innovation entrepreneurship (trade-wise)”, “Intellectual property law”, “Molecular and genetic methods in crime detection”, “Molecular and genetic methods in ecological researches”, “Psychophysiology” or “Anthropology” ascertained that all students obtained appropriate *social skills* in all Bachelor programmes.

The peers could see that the Bachelor in Biology contains a number of modules like “Mathematics”, “Physics”, “Chemistry”, “Botany”, “Zoology”, “Biometrics” or “Physiology” that ascertain that the students obtain a sound fundamental biology-relevant knowledge of mathematics and the natural sciences. Competences in the field of molecular, cell and organismic biology can be obtained in modules like “Cell Biology”, “Histology”, “Common Microbiology (EEEE)”, “Biology of individual development and the theory of evolution”, “Human Anatomy”, “Plant physiology”, “Human and animal physiology (EEEE)”, “Endocrinology” or “Genetics (EEEE)” as the peers confirmed. The students can select a so-called *Individual educational trajectory* like “Biological diversity and cellular biology”, “Applied aspects of bio-chemistry and microbiology”, “Genetics and Molecular biology” or “Physiology and biophysics” which allows them to gain sound knowledge in at least one special life science area. However, the peers noted that there was no mention of bio-informatics at all. The peers underlined that this is a crucial field of future developments in this discipline and therefore they recommended taking bio-informatics into

consideration when revising the programmes. The peers could comprehend that methodological competence in bio sciences are being taught in a number of different modules; however, in the light of the very limited availability of laboratory space and equipment (compare criterion 4.3) and the fairly low amount of laboratory hours in the different bio-science related modules as outlined in the module descriptions, the peers came to the conclusion that the laboratory courses are focused on reproducing given laboratory tasks and did hardly allow for hands-on experimental laboratory work. The peers underlined that from their point of view the laboratory facilities and the amount of hands-on experimental laboratory exercises must be significantly increased (e.g. Simple electrophoresis equipment like Lego plates with platin wires. For molecular Biology purposes, restriction enzymes and other nucleic acid modifying enzymes may be self produced including TAQ polymerase, etc.) to be able to achieve the intended learning outcomes. Given the present laboratory environment, the peers doubt that minimum standards of practical work in labs can be reached and therefore that the learning outcomes for a Bachelor degree in Biology can be achieved.

The reviewers were informed by the university members that students may become trained in experimental work at various research institutes outside the University, primarily at master level, when they get the opportunity to share ongoing research projects. The reviewer came to the conclusion that basic laboratory training should be an integral part available to all the students, beginning at the bachelor level.

Looking at the practical work outside the University the peers understood that different internships (Educational practice (field, botany), Educational practice (field, zoology), Practical training, Pedagogical practice, Pre-diploma Practice) with an overall volume of 21 ECTS credits need to be carried out and the peers concluded that much of the practical work is dedicated to business related work and only a small part is connected to educational practices. The staff members underlined that at the beginning of each year students receive introductions concerning safety and security. In the module descriptions this is only mentioned in the context of the internships. The peers noted during their laboratory visit that international standards of safety measures are not met in several laboratories (for example, sanitation, safety precautions, emergency tools and plans). The peers also emphasized that international safety and environmental standards need to be covered more prominently in the curricula of all programmes. Although the peers understood that ethical topics were covered in some of the modules, they still pointed out that particularly bio-ethical topics like bio-safety and environmental (compare also criterion 1.1) issues should be included in the curriculum. The peers learned that an introduction to scientific research methodology, scientific writing, and ethical aspects of publication (e.g. plagiarism) are included in the "Research work and preparation of dissertation"; however,

after inspection of the theses presented, the peers pointed out that students should be encouraged to take advantage of modern type-setting and presentation software more regularly and demonstrate appropriate research methodology more concisely in their thesis writing.

Analyzing the curriculum of the Bachelor of Education of Biology the peers could hardly see any difference in the curriculum compared to the Bachelor of Science in Biology except for the fact that the Individual Educational Trajectories differed. When asking the programme coordinators the peers learned that the modules related to educational methods like the module “Methods of teaching biology” have a stronger focus on teaching and didactics. The same applies to the other modules where the connection to education is dealt with in more depth. The peers could comprehend that much of the curriculum in the Bachelor of Science and the Bachelor of Education is similar as a teacher also needs to have profound competences in the professional field; however, a Bachelor of Education needs in addition to the professional competences also a strong focus on educational and didactical theories, teaching and didactical methodologies and practical educational training (educational and pedagogical experiences in school). The internships should generally have a focus on teaching and educating students of all grades; additionally, it must be ascertained that the teaching internship is embedded in a theoretical framework and accompanied by university staff with excellent didactical expertise. This includes a competence orientated teaching and learning at University as well as at school. All in all, the peers concluded that the didactical components need to be increased significantly in the educational programmes to be able to achieve the intended competence orientated learning-outcomes.

The peers learned that also the Master in Biology has to offer 12 ECTS points of State Compulsory Courses. The peers understood that this was a national rule constituted by the Ministry of Education of the Republic of Kazakhstan but they still underlined that the Ministry should be advised that this amount of state regulated compulsory modules was very high. Looking at the so-called Basic Professional Modules the peers could comprehend that modules like “Environment and biodiversity conservation”, “Organization and planning of research”, “Theoretical Biology” or “Genetics and proteomics” lead to advanced knowledge in core subjects of life sciences. The peers also appreciated that the students have the opportunity to further deepen the focal area of interest in the Individual Educational Trajectories (Diversity of living organisms, Cellular biology, histology and embryology, Genetics and Molecular biology, Physiology and biophysics). The peers could also understand that a number of modules like “Internship and Thesis”, “Research Internship”, “Research Seminars” and “Thesis Writing and Defence” enabled the students to get into a position to discuss complex life science issues as well as own research results com-

prehensively. However, considering the laboratory equipment, the peers pointed out that this needs further enhancement to be able to produce high-profile research results. All in all, the peers concluded that the curriculum of the Master of Biology was well designed and suitable to reach the intended learning outcomes.

When analyzing the Master of Education in Biology the peers noted slight differences in the curriculum compared to the Bachelor programme. The peers gained the impression that the compulsory state modules and the compulsory professional modules were largely the same. The peers also noted that in the Master of Education only two individual educational trajectories, namely “Individual Educational Path” and in a very specialised manner in “Applied Biophysics and Applied Physiology” (Methods of teaching thermodynamics) are offered; the peers gained the conviction that these trajectories focused on methodologies connected to application and teaching. In these trajectories modules like “Methods of teaching Experimental Biology” or “Methods of teaching Bioenergetics” are offered as electives. Unlike the Bachelor of Education the peers comprehended that in the Master of Education programme so after inspection of the theses presented, the peers suggested that students should be encouraged to take advantage of modern typesetting and presenting software more regularly and demonstrate appropriate research methodology more concisely in their thesis writing. Trajectories and modules are offered that foster the specific educational qualification profile. Hence, contrary to the Bachelor of Education programmes the peers were positive that the Master of Education could develop a qualification profile that is in line with the intended learning outcomes.

The analysis of the Bachelor of Chemistry leads to similar conclusions as the Bachelor of Biology. The compulsory state and social communicative modules are the same for all Bachelor programmes. Modules like “Mathematics” and “Physics” provided a sound basis in chemistry-relevant fundamental knowledge of mathematics and the natural sciences as the peers confirmed. Modules like “Inorganic and Laboratory Chemistry”, “Physical Chemistry”, and “Organic and colloid chemistry” developed a sound knowledge of the core subjects of chemistry. The peers also appreciated that Individual Educational Trajectories like “Theoretical and applied chemistry”, “Chemical examination” and “Chemistry of nanomaterials” allowed the students to gain knowledge of a professional area of their interest. However, like for the Bachelor in Biology the peers were concerned about the facilities and the number of instruments and the state of laboratory equipment in the Chemistry Department. The peers underlined that the laboratories and the equipment needed to be enhanced significantly to be able to meet the intended learning outcomes in terms of practical chemistry work; the intended learning outcomes will be achieved more easily with modernized laboratories. The peers understood that safety instructions and the dangers of chemical substances are being properly discussed prior to any kind of labora-

tory work; the peers still gained the impression that safety features in the laboratories need to be upgraded to meet international safety standards as is being outlined in more detail under criterion 4.3. In the different trajectories an introduction to environmental chemistry is foreseen which includes environmental issues with regard to chemistry as the peers understood. Like for the Bachelor in Biology, the peers learned that an introduction to scientific research methodology, scientific writing and ethical aspects of publication are included in the module “Research work and preparation of dissertation”; however, the peers noted also for the Bachelor of Chemistry that the quality of some theses could be further improved and therefore, the peers underlined that the introduction to scientific writing should be revised.

When analyzing the Bachelor of Education of Chemistry the peers noted that the professional basics are included in the curriculum as in the Bachelor of Science of Biology. But unlike in the Bachelor of Education of Biology, the peers noted for this programme a focus on educational topics in the curriculum. Module 7 “Didactics of Chemistry “ deals explicitly with topics like methodology of training Chemistry, methodology of solution of Chemical tasks or the methodology to conduct chemical experiments. Furthermore, the peers took positively note of modules 8 “Education”, 9 “Ethno pedagogic and education” and 10 “Technologies of training in Chemistry”. The peers underlined that they could see that educational and didactical theories and methodologies are strongly emphasised in the curriculum. Additionally, the only Individual Educational Trajectory that is offered is called “Chemistry and Education” including a number of modules like “Personality- oriented teaching in modern school”, “Techniques of training on lesson of Chemistry”, “Technology of creating academic-methodical complex on Chemistry” or “Theory and practice of elective courses” that further develop the didactical competences of the students. All in all, the peers could comprehend that the curriculum of this Bachelor of Education was designed in a way to systematically develop the didactical and educational competences of the students although the peers also indicated that especially topics to didactical and educational theories could be further improved.

The peers confirmed that for the Master of Chemistry the curriculum contained a number of modules like “Analytical Chemistry” or “Organic and Physical Chemistry” that developed more advanced professional competences in core fields of chemistry building upon the competences obtained in the Bachelor programme. The peers also appreciated the broad set of Individual Educational Trajectories like Analytical chemistry and chemistry of rare elements, Inorganic chemistry and chemical physics, Thermodynamics and catalytic processes, Colloid and organic chemistry or Drug chemistry and polymer chemistry that allowed the students to specialize in their field of interest. The peers could see in the module descriptions that laboratory work is included in a number of modules which fur-

ther develops the methodological competences. A short industrial internship (primarily conducted abroad) is also foreseen; the peers pointed out that this international internship was a helpful experience to the students. The peers also understood that four different seminars on research were offered which shall deepen the research and scientific competences of the students and prepare them for the Master's thesis; however, only 3 ECTS credit point are awarded to these seminars. In the Master's thesis the students shall prove that they are capable to solve a problem in an unknown environment independently and successfully and that they know how to apply scientific research methods. All together, the peers concluded that the curriculum was designed in a way to successfully achieve the intended learning outcomes of this programme.

The curriculum of the Master of Education of Chemistry also contained a number of professional modules deepening the core subjects of Chemistry. The peers also noted that there was a specialisation module called "The methodology and modern teaching technologies of General and Inorganic Chemistry" which further developed the educational competences of the students. The Individual Educational Trajectories also focused explicitly on educational and didactical topics which further underpins the educational qualification profile of the students as the peers pointed out. The peers concluded that the curriculum of the Master of Education was appropriate to achieve the intended learning outcomes.

In summary, the peers came to the conclusion that apart from the significant shortcoming of practical hands-on experimental lab work, bio-ethical topics in the Bachelor of Biology and the shortfall of the educational competences in the Bachelor of Education of Biology the curricula had potential to reach the intended learning outcomes.

Criterion 1.4 Admission requirements

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 1.4
- Admission regulations in English language on the University website: Model rules for enrollment in educational institutions realizing professional educational programs of higher education
<http://kaznu.kz/content/files/pages/folder486/student%20admission%20model%20rules.pdf> (accessed 20.12.2016)
- Academic Policies: The main provisions of the academic policy of Al-Farabi Kazakh National University

http://www.kaznu.kz/en/15266/page/Academic_process/Academic_policy/ (Accessed 20.12.2016)

- Discussions with Al-Farabi management, students and teaching staff

Preliminary assessment and analysis of the peers:

The peers learned that student admission for all faculties and schools within Al-Farabi Kazakh National University is defined in the “Model rules for enrollment in educational institutions realizing professional educational programs of higher education” which is published in English on the website. The admission requirements are not outlined on the subject-specific websites at all; in terms of transparency, this information should be made available on the respective websites as the peers underlined.

The admission procedure for the Bachelor programmes is constituted by regulations issued by the Ministry of Education and conducted through a nationwide unified exam after completing their High School or Professional School Diploma. 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 defines a limited amount of scholarships for each Bachelor 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, 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.

Admission to the Master programmes is carried out in a similar way. Applicants must hold a Bachelor’s degree from a similar scientific background corresponding to the level of the higher education. Applicants have to pass a national exam covering a second language and another Programme Based Written Exam. Retake of these exams is not allowed. National scholarships set for each subject are offered to those with the best results. International students can apply for the Higher Education Institutes by taking the complex test (Bachelor degree) and University entrance exams.

In summary, the auditors judge the terms of admission to be binding and transparent as well as appropriate for the achievement of the intended learning outcomes.

The peers analyzed the “The main provisions of the academic policy of Al-Farabi Kazakh National University” and understood that it is the rule for credit transfer that the departments compare the content covered in a foreign University with the discipline syllabus based on Al-Farabi Kazakh National University study plan and decide on a case to case

basis whether the academic achievements gained elsewhere can be recognized. The peers pointed out that according to the Lisbon Recognition Convention the University has to prove to the applying student that there are *substantial differences* between the achievements gained elsewhere and the programme requirements of a Higher Education Institution. The acknowledged that that in § 12.5 of “The main provisions of the academic policy of Al-Farabi Kazakh National University” it is stated that “goals, objectives, general rules and insurance of the implementation of the academic mobility of students correspond to the basic principles of the Bologna Declaration”; however, the peers underlined that this needs to be further clarified in the regulations how recognition is handled to comply to the principles of the Lisbon Recognition Convention.

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

The peers welcomed the revision of the program objectives and the learning outcomes for each program and the publication on the website. The peers verified that the objectives and intended learning outcomes are published in English on the subject specific websites; however they are not fully in line with the revised versions submitted in the appendices. The peers pointed out that the more elaborated versions in the appendices need to be published on the website. The peers positively noted that the versions in the appendices and in the Diploma Supplements are identical. The peers analysed the revised learning objectives and came to the following conclusions:

Ba Biology – the peers confirmed that problem solving competences as well as practical work in labs and outdoors are described appropriately. In addition, the peers noted that the new learning outcomes make a clear reference to bioethical topics (“Knowledge about principles of bioethics: moral questions and issues surrounding the life sciences concerning human beings, animals, and nature” and “to be familiar with the Universal Declaration of Bioethics and Human Rights of UNESCO, and, for example, its application by the UNESCO Chair in Bioethics”). The peers confirmed that the revised program objectives and learning outcomes are in line with the subject specific criteria of ASIIN.

Ba Biology (educational) – while the peers were convinced that bioethical topics are covered in the scientific Bachelor of Biology, they are missing the reference to bioethical topics for this educational program. The peers could see some objectives considering competences in the field of didactics and teaching methodology have been considered. Nevertheless, theoretical knowledge and outcomes are only implemented in relation to biology but not in relation to biology education. Given that the educational track educates future teachers, competences in biology education and not only in pedagogy and psychology are

crucial; hence, theoretical learning outcomes considering biology education need to be implemented accordingly.

Ma Biology – the revised learning objectives make a clear reference to advanced core topics of Biology as the peers understood. The students shall develop “Knowledge of Environment and biodiversity conservation, Organization and Planning of Scientific Research, Theoretical Biology, Genetics and proteomics, Cellular biology”. Additionally, the students shall have the “ability to work autonomously, taking initiatives and managing time: ability to organise complex efforts over a period of time, producing the required result on schedule” and shall be able to “master modern methods of research in the field of: stem cells biology, DNA sequencing, methods of bioinformatics, digital and statistics in genomics and proteomics, theoretical biology, molecular biology, etc.” The peers confirmed that it becomes evident that students shall be able to implement research projects independently. Finally, the peers also comprehended that managerial skills like “the ability to show leadership based on theoretical knowledge” and the “ability to work with others in a multidisciplinary multi-national setting” shall be adequately developed. The peers confirmed that the learning outcomes for the Master of Biology are in line with the ASIIN criteria.

Ma Biology (educational) – The submitted appendix refers to the Master of Chemistry (pedagogic). Supposing that the submitted document deals with the educational Master of Biology, the additional statements improve the overall program objectives; however, theoretical approaches with evidence based research in biology education are still missing. The peers concluded that this educational Master needs to include the integration of theoretical perspectives in biology education (didactic).

Ba Chemistry – after the revision of the program objectives and the learning outcomes, the peers could see that core topics of Chemistry are properly covered now as the following learning outcomes demonstrates: “student will demonstrate the ability to recognise the traditional core of chemistry (organic, inorganic, analytical and physical chemistry) and demonstrate the ability to apply this knowledge”. Also environmental awareness shall be developed as the students shall be able to “apply measures to reduce chemical exposures on the environment”. Finally, also the concern regarding team work competences have been covered in the learning outcomes that students shall obtain “interpersonal and interactive skills such as team-working”. The peers concluded that the revised learning outcomes meet the standards of the ASIIN subject-specific criteria.

Ba Chemistry (educational) – the peers could see that core competences of Chemistry shall be obtained as students shall have the “ability to report, apply, and evaluate main facts, concepts, principles and theories of chemistry” and “to recognize and apply chemical principles in specialized sub-areas”; however, a focus on educational chemistry knowl-

edge is still missing. With regard to the educational focus of this program, the peers understood that students shall have the “general knowledge of the foundations of teaching technologies in Chemistry” and “have mastered the basic concepts of pedagogical skills during teaching of chemical laws and be able to summarize all necessary themes together”. In addition, students shall obtain “the ability to apply pedagogical methods corresponding to chemical knowledge and understanding of the solution of qualitative and quantitative problems”. To highlight the issues from a theoretical perspective: There are three forms of knowledge a teacher should develop: content knowledge (chemistry – the program fulfills this requirement!), pedagogical knowledge (the program fulfills this requirement) and pedagogical content knowledge = chemistry education or didactics – the program does not fulfill this requirement.

Master Chemistry – The peers understood that deepened knowledge in Chemistry shall be obtained as the students shall develop “knowledge of scientific-theoretical bases in area Chemistry”. Furthermore, graduates shall “be able compete for employment in high-level organizations” which shows to the peers that employability and labor market relevance are also included in the learning objectives. The peers concluded that the learning outcomes are in line with ASIIN criteria.

Master Chemistry (educational) – even though the peers noted that the revised program objectives showed that the curriculum contains elements of teaching methodology and didactics, the peers could still not find this adequately formulated in the learning outcomes and keep up their envisaged requirement that didactical and pedagogical theories, methodologies, and applications need to be outlined more clearly in the learning objectives.

Summary for all educational programs:

The peers are grateful for the detailed explanation that aspects of “bioinformatics” are covered in a number of modules; this should also be outlined in the module descriptions accordingly as the peers pointed out. But, in general, the peers think that bioinformatics is appropriately considered and the envisaged recommendation is not required.

The peers welcomed that Al-Farabi Kazakh National University introduced a number of new modules to the curriculum and put a stronger focus on educational and didactical training. However, also in the light of the revised learning objectives, the peers concluded that the presented changes lead into the right direction but the curriculum still needs to be tailored more clearly to the educational focus to be able to achieve the intended learning outcomes.

Based on the documents provided by Al-Farabi Kazakh National University with regard to recognition of academic achievements obtained elsewhere the peers concluded that the existing rules and regulations comply with the Lisbon Recognition Convention.

The peers see this criterion as partly fulfilled.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 2.1
- Appendix 1 - Objectives-Module-Matrix – available for all degree programmes under accreditation
- Appendix 5 – Module Handbooks for all degree programmes
- Subject specific websites:
 - Ba Biology: http://www.kaznu.kz/en/education_programs/bachelor/speciality/721 (accessed 20.12.2016)
 - Ba Biology (pedagogic): no specific website available
 - Ma Biology: http://www.kaznu.kz/en/education_programs/magistracy/speciality/878 (accessed 20.12.2016)
 - Ma Biology (pedagogic) http://www.kaznu.kz/en/education_programs/magistracy/speciality/994# (accessed 20.12.2016)
 - Ba Chemistry: http://www.kaznu.kz/en/education_programs/bachelor/speciality/726 (accessed 20.12.2016)
 - Ba Chemistry (pedagogic): http://www.kaznu.kz/en/education_programs/bachelor/speciality/725 (accessed 20.12.2016) - *however, website does not contain any information!*

- Ma Chemistry:
http://www.kaznu.kz/en/education_programs/magistracy/speciality/874 (accessed 20.12.2016)
- Ma Chemistry (pedagogic):
http://www.kaznu.kz/en/education_programs/magistracy/speciality/578 (accessed 20.12.2016)
- Discussions with Al-Farabi management, students, business representatives and teaching staff

Preliminary assessment and analysis of the peers:

The structure of the Bachelor and Master programmes under review is clearly outlined in the Diploma Supplements and the Module Handbooks for each study programme. All degree programmes consist of modules which comprise a sum of teaching and learning units. The module descriptions are not published on the subject specific website as indicated under criterion 1.3; however they are attached as appendix to the self-assessment report. Based on the analysis of the sequence of modules and the respective module descriptions the peers concluded that the structure of the degree programmes ensures that the learning outcomes can be reached. The peers understood that the students can set an individual focus during the course of their studies (Individual Educational Trajectory) and that the students receive adequate support by the advisors when they have to decide which electives to choose (compare criterion 2.4).

The auditors comprehended that all students have to carry out a number of internships, namely pedagogic, research and industry. The pedagogic internship is organized in the first year of studying. Industry internship is organized during the second, third and fourth year of studying with different workloads. The peers verified that all intervals of practical work are well integrated into the curriculum and that Al-Farabi Kazakh National University observes the quality of the internships in terms of relevance, content and structure. The students write a report about their practical work and this report is reviewed by a member of the teaching staff. This scientific advisor also visits the organization where the internship is done and checks the equipment and talks with the people responsible there. The contacts made during the internships can also be used to write the final thesis at the same institution. The peers stated that the overall amount of internships adds up to about 10% of the overall workload which is less than in most comparable international programmes; but the peers were convinced that this was still acceptable. With regard to the Master programmes the peers acknowledged that the overall amount of internships including the final thesis is adequate. In summary, the peers confirmed that the module

objectives help to reach both the qualification level and the overall intended learning outcomes.

International Mobility

The management of Al-Farabi Kazakh National University explained that the enhancement of international mobility was high on the agenda. Any department has a vice-dean for international co-operations as well as every chair. There is also a website where all information is available and students can approach the international office for more information on international mobility. Al-Farabi Kazakh National University participates in a number of international exchange programmes but most of them are dedicated to the Master programmes. Bachelor students are also offered the opportunity of international mobility; however, the number of scholarships to be able to afford an international stay is very limited. Therefore, during the discussion students indicated their interest to partake in international exchange programmes but were unable to afford them and only few students were fortunate enough to get one of the few scholarships. The self assessment report provided a list of students that had participated in international mobility in the last years. Apart from full-semester exchanges particularly Master students are supposed to partake in a full-sponsored two-week summer exchange at foreign universities. The peers learned that most of the students have already partaken in this programme that allows for first contacts with international mobility. The peers welcomed these efforts to give Master students the opportunity to go abroad for, at least, a short duration. With outgoing students and the receiving institution a learning agreement is signed before they leave in order to avoid difficulties of recognition. In general, the peers got the impression, that all necessary information on mobility is made available.

The peers learned that about 80% of the students take Kazakh language as the preferred mode of teaching and learning, but the peers also understood that it is part of the strategic plan of the University to increase the overall competence in English among teachers and students. Beside student mobility, the self assessment report also presented a list of teaching staff who had participated in international mobility. The peers appreciate that members of the teaching staff are currently improving their language skills and take classes in English. Notwithstanding, the peers recommended putting even more emphasis on improving the English language skills of the teaching staff, to increase the amount of language courses, and to encourage even more members of the teaching staff to spend some time at foreign (English speaking) universities. In addition, they suggested using more English textbooks and introducing English elements into the curriculum of the degree programmes.

Criterion 2.2 Work load and credits

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 2.2
- Appendix 1 - Objectives-Module-Matrix – available for all degree programmes under accreditation
- Appendix 2 - ECTS users' guide of Al-Farabi Kazakh National University
- Appendix 5 – Module Handbooks for all degree programmes
- Discussions with students and teaching staff

Preliminary assessment and analysis of the peers:

The University provided an ECTS Users' Guide which includes guidelines for the implementation of the European Credit Transfer and Accumulation System (ECTS) at Al-Farabi Kazakh National University (KazNU). This guideline clarifies that 60 ECTS credits are attached to the workload of a fulltime year of formal learning (academic year) and the associated learning outcomes. The Bachelor programmes run over a period of 8 semesters with a total of 240 ECTS credit points and the Master programmes over a period of 4 semesters with a workload of 120 ECTS credit points. In most cases, student workload ranges from 1,500 to 1,800 hours for an academic year, whereby one credit corresponds to 25 to 30 hours of work. In the module descriptions it is clearly stated that for 1 ECTS credit point 30 hours of student workload are attached and the peers confirmed that this was applied consistently. Furthermore, the peers confirmed that the indicated workload in the module descriptions differentiated between classroom hours, tutorials, work in groups / practical work, self-study (at home / library), and assessment (Test, Written exams, etc). The peers assessed this presentation very transparent and plausible and confirmed that this structure was applied consistently. In the self assessment report the workload per semester is presented and the peers gained the impression that there were slight deviations of up to 33 ECTS points per semester but all in all followed the assessment of the students who indicated that they perceive the workload as realistic and acceptable and that there was no structural pressure in any of the semesters. Hence the peers concluded that the estimated time budget is realistic, and the students can complete the degree programme without exceeding the regular time frame.

Criterion 2.3 Teaching methodology

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 2.3
- Appendix 1 - Objectives-Module-Matrix – available for all degree programmes under accreditation
- Appendix 5 – Module Handbooks for all degree programmes
- Discussions with students and teaching staff

Preliminary assessment and analysis of the peers:

The peers comprehended that the teaching methodology varies between the Bachelor and Master level. At Bachelor level, the students gain theoretical knowledge and have more practical classes in their further studies. At Master level, students conduct more individual scientific research. Teachers are free to choose adequate teaching methods and apply them. The following teaching methods are used in the programmes: lecture, case study work, seminar, small group activities, student presentations, student debates, and guest lectures. The peers confirmed that the module descriptions apply a consistent pattern that shows the form of examinations as well as the form of teaching. Each module indicates the working amount of assignments for problem solving purposes, the presentation/seminars, the projects, the field studies (technical visits), and the practice (laboratory, virtual court, studio studies etc.). The peers considered this as a very transparent presentation of the learning methods and could verify that different teaching approaches are being applied and differed with regard to the type of the module. Hence, the peers also gained the conviction that appropriate teaching methods and instruments are used to support the students in achieving the learning outcomes. The module descriptions outline clearly the amount of classroom hours and self-study time which are well-balance as the peers confirmed.

Criterion 2.4 Support and assistance

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 2.4
- <http://welcome.kaznu.kz/en/> (Accessed 20.12.2016)
- Academic Policies: The main provisions of the academic policy of Al-Farabi Kazakh National University
http://www.kaznu.kz/en/15266/page/Academic_process/Academic_policy/ (Accessed 20.12.2016)

- Discussions with students and teaching staff

Preliminary assessment and analysis of the peers:

The peers examined the University Website of Al-Farabi Kazakh National University and confirmed that a lot of general information about the different degree programmes was available; the peers laudably noted that most of the general information about the University is also available in English. However, the information provided in English on the programme specific websites is fairly limited as the peers pointed out. Module descriptions, study plans, admission requirements, and similar information were not available on the websites which needs to be amended as the peers underlined to foster its goal of further internationalization (compare criterion 5). But the students confirmed that there was a thorough introduction period for all freshmen providing them with all information required including access to the University's intranet where all information about the different degree programmes was available. The students underlined that they felt very welcome at the University and had been provided with all necessary information. The peers learn that for each degree programme students are divided into groups that receive their own advisor. Academic advisors are lecturers and professors of the University. The task of the academic advisor begins during the freshman year and continues throughout to the senior year. The academic advisor provides academic advice in terms of courses to be selected; additionally, the academic advisor also supports students regarding personal matters. The students confirmed that the academic advisors were very supportive and tried to assist the students in all matters. Additionally, students can always approach senior professors, lecturers and other faculty members for advice and assistance as they highlighted. The students stressed that they are highly satisfied with the support measures at Al-Farabi Kazakh National University. The auditors concluded that there were adequate resources available to provide individual assistance, advice and support for all students. The peers underlined that the allocated advice and guidance, namely the tutor, assisted the students in achieving the learning outcomes and in completing the course within the scheduled time

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

The peers understood that it requires a lot of time and efforts to improve language skills and the peers could see that a lot of efforts are undertaken at Al-Farabi Kazakh National University as the development of English language skills are a key objective of the university. Given the resources used to achieve that goal, the peers concluded that Al-Farabi Kazakh National University is on a good track and will reach its goal in the future. There-

fore, the envisaged recommendation is not required as the peers concluded. The peers see that this criterion is fulfilled.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 3
- Appendix 5 – Module Handbooks for all degree programmes
- Discussions with students, business representatives and teaching staff

Preliminary assessment and analysis of the peers:

The peers comprehended that for each module a midterm, an end-of-term and a final examination is foreseen. Exams are module-related and offer students continuous feedback on their progress in developing competences. Regular and interim control is held in the form of quizzes, tests, presentations, essays, class discussions, roundtables, simulations and other assignments. The exact form of regular and interim control is determined by a lecturer depending on specifics of a concrete module; it is determined in the syllables they get at the beginning of the semester. The sum of all points, for the midterm exams and the ongoing monitoring, are entered into the electronic journal by the teacher. If a student has not enough points he is not allowed to take the final exam. Final examinations can be oral, written, in the form of tests, or take a combined form (oral-written or written-testing). The form of a final examination is suggested by a lecturer and must be approved by the department's Academic Board. In reality, the students pointed out that the final examinations tend to be written only. The module descriptions mention the different examinations that need to be taken but the exact type of examination is not mentioned as the peers criticised. As a consequence, the peers were unable to judge whether the forms of examinations were competence oriented or not. Based on the discussions with the students and the business partners, the peers gained the impression that the number of oral examinations as well as the number of written reports was very limited. The business partners pointed out that sometimes the graduates were not properly prepared to hold adequate oral presentations or showed weak writing skills. The peers underlined that the forms of examination need to be competence oriented and should contribute to the achievement of the intended learning outcomes. To make up for a failed examination a student must retake the module in the next academic term or in the summer semester. The peers confirmed that rules have been defined for re-sits, disability compensation measures, illness and other mitigating circumstances etc.

During the examination period the students must take all exams according to the schedule in strict accordance with the individual study plan. The students confirmed that the number and distribution of the exams were acceptable and that both the exam load and preparation times are adequate. 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 the online platform.

Al-Farabi Kazakh National University added that it was possible that a student carried out the final thesis outside the University. Most lecturers maintain close connections to private businesses and if the supervisor and the student agree on a topic accepted by the private company the project could be conducted in the company. The first supervisor had to be the staff member from Al-Farabi Kazakh National University, but the project could also be co-supervised by an expert from industry.

When analysing the different final theses in the Bachelor programmes the peers noticed a broad variety in the quality of the theses. The peers were aware that all students receive an introduction into scientific research work; however, as the different quality of the dissertations showed, the peers were convinced that the introduction to scientific writing needs to be updated such that current international formats in research and presentation are better visualized. (compare criterion 1.3).

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

The peers welcomed the explanation of Al-Farabi Kazakh National University that the forms of examination have been expanded and different forms are applied now. However, the peers would like to understand how this was done exactly and therefore they stick to their intended requirement.

The peers thank Al-Farabi Kazakh National University for the submission of the “Description of Scientific Writing” and can see that all students receive an introduction to the basics of scientific research. It is also plausible that the quality of final thesis differs among students and that this is reflected in the different grades. Therefore, the peers think that Al-Farabi Kazakh National University is moving into the right direction but the scientific standards of the final thesis need to be further improved to be in line with international standards. The peers concluded that this criterion is only partly fulfilled.

4. Resources

Criterion 4.1 Staff

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 4.1
- List of and information about research projects in the self-assessment report
- Appendix 3 – Staff Handbooks for all degree programmes
- Discussions with teaching staff and management of Al-Farabi

Preliminary assessment and analysis of the peers:

The peer group studied the staff handbook and concluded that the composition of the teaching body was able to ensure that the intended learning outcomes for the ordinary degree programmes are achieved by the time the degree is completed. However looking at the intention to develop teaching staff with didactical competences, the peers could only see very few staff members with didactical and educational background. The peers concluded that staff members with expertise in didactical and educational expertise are required to be able to achieve the intended learning outcomes. Sometimes also guest lecturers from industrial partners offer lecturers to give the students first hand information on labour market developments. Additionally, foreign guest lecturers are invited regularly and hold English lectures; this was underpinned by a long list of international visiting lecturers in the self-assessment report. The peers explicitly expressed their compliments for the successful programme and recommended continuation. Regarding the recruitment of staff members the auditors gained the impression that a competitive selection procedure was carried out to recruit University lecturers from other institutions of Higher Education or from private companies. The average ratio of students to teachers at all HEIs in Kazakhstan is defined by the Law of Education. The peers confirmed that there are sufficient staff resources available for providing assistance and advice to students and to fulfil administrative tasks.

The auditors noticed that the self-assessment report provided a detailed overview of the research activities carried out in the last years; the funds are coming from governmental institutions, private companies and also international institutions. Al-Farabi Kazakh National University highlighted that research funding is playing an increasingly important role with regard to the overall budget of the University and the upgrading of research equipment. Given that the peers had not seen a lot of sophisticated laboratories fostering research activities, they understood that additional equipment could be used in close cooperation with business partners. The students confirmed that Bachelor as well as particularly Master and PhD students were actively involved in the research projects. The

business partners of the University confirmed that a number of business research projects were implemented in close cooperation with Al-Farabi Kazakh National University and a number of final theses are written in cooperation with business partners (compare criterion 3). The staff members confirmed that they received support and incentives if they promoted research activities. The peers could see that research and development activities are implemented by the teaching staff; however, the peers underlined critically that they are concerned that the lack of institutional up-to-date laboratory equipment might hamper the implementation of advanced research projects.

Criterion 4.2 Staff development

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 4.1
- Capacity development offers / Further education
- Discussion with lecturers

Preliminary assessment and analysis of the peers:

Al-Farabi Kazakh National University pointed out that there is the “Institute of qualification improvement” which is an integral part of the University’s structure. The peers learned that in this institute academic staff can improve their professional skills. Staff members who wish to further develop their professional and teaching skills can participate in international conferences, seminars, etc. Al-Farabi Kazakh National University presented a list in the self-assessment report indicating staff members who had visited international Universities for research stays and a list of academic mobility of staff members. During the onsite visit the members of the teaching staff expressed their general satisfaction with their opportunities to further improve their teaching skills. However, when talking to the staff members many of them refused to speak English as they felt that their level of English was not adequate to converse in a proper way. The peers underlined their conviction that learning a language can best be achieved through practical application and they encouraged staff members to offer components of their lectures in English and give students the tasks to write and present in English.

In summary, the auditors confirm that Al-Farabi Kazakh National University offers sufficient support mechanisms and opportunities for members of the teaching staff who wish to further develop their professional and teaching skills.

Criterion 4.3 Funds and equipment
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Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 4.3
- Onsite visit of the laboratories
- Discussions with students, business representatives and teaching staff

Preliminary assessment and analysis of the peers:

During the discussion with representatives of the management of Al-Farabi Kazakh National University the peers learned that largest amount of the overall funds for teaching and equipment stem from governmental funds. Additional contributions are provided by private companies. The peers comprehended that the governmental funding was closely linked to the number of students permitted to the University and the funding was secured for the next years.

The peers inspected the laboratories in order to assess the quality of the infrastructure and the technical equipment. As indicated under criterion 1.3, the peers were dissatisfied with the amount of laboratory equipment particularly in the Biology Department but also, to a lesser extent, in the Chemistry Department. The staff members explained that laboratory work was performed in smaller groups of 10 to 12 people who were split up into teams of 3-5 students; the teams were given certain tasks that they had to complete. The staff members explained that students developed primarily procedural skills; independent problem-solving tasks were only acquired to a very limited extent. The peers acknowledged that due to concise organisation all students had an opportunity to carry out basic laboratory experiments; however, compared to international standards the peers underlined that the amount of hands-on experimental and problem solving oriented laboratory work was insufficient and needed to be increased significantly. However, the peers highlighted that the amount of laboratory space, working places and equipment needed to be increased considerably to be able to carry out the required laboratory experiments to an extent that permitted experimental training to all students enabling them to achieve the intended learning outcomes. The peers saw that the situation in chemistry was less serious with respect to laboratory space, working space, but could still be significantly improved with respect to instrument and safety provisions. A concept (including a timetable of implementation until the reaccreditation) for up-grading the equipment in quantity and quality for the teaching laboratories must be developed and initial steps to its implementation must be established. During the discussions, staff members reported that the availability of ordinary consumable items was a challenge; sometimes it took weeks or

even months to obtain requested chemicals that were required for laboratory work. The peers underlined that this situation needed to be changed urgently and suggested providing a certain amount of resources to the departments that could be managed autonomously to ascertain that required consumables could be obtained without much delay.

The peers were aware that all students receive an introduction to safety measures when starting with the laboratories. Still, when visiting the laboratories the peers concluded that internationally accepted quality standards (e.g. ISO) for laboratories are not adopted. Since there are several serious deficits with respect to work safety, hygienic conditions and quality assurance the peers emphasized that international quality and safety standards must be met.

The peers understood that a lot of research work is being implemented in cooperation with business partners and welcomed this generation of synergies; it was also acknowledged that some modern equipment had been purchased which enables staff members to carry out some research work at the University itself. Notwithstanding, the peers strongly recommended further improving the laboratory equipment for research purposes.

When talking to the students, they indicated a general satisfaction with the teaching and learning environment but underlined that there were only very few student learning facilities and that they would appreciate longer opening hours of the library. The peers could understand these concerns of the students and recommended to see if more student learning facilities could be made available or if the opening hours of the library could be increased.

In summary, the peers concluded that the infrastructural environment for the degree programmes under review need a significant upgrading to be able to fully achieve the intended learning outcomes.

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

The peers welcomed that the Faculty is preparing the applications for new and additional equipment and reagents to improve laboratory equipment and very much support this effort. Ba Biology / Bachelor Biology (educational): The peers thank the University for the explanation of the laboratory work that is taking place in the bachelor programs. However the number of practical course rooms is insufficient and Al-Farabi Kazakh National University is in agreement with the peers that the laboratory based training needs to be improved including scientific questioning, performing experiments of every student by themselves, and further evaluating and critically discussing the results thereof.

The peers understood that safety standards are a serious topic at Al-Farabi Kazakh National University and welcomed that it is emphasized even further in the curriculum. Even though the peers could see during the on-site visit that basic safety measures were in place and students are being introduced to safety measures, the peers are still of the opinion that the University needs to upgrade the laboratories according to ISO quality standards to really meet international standards.

The peers welcomed the additional information about the pedagogical competences of the staff members. The peers also took positive note of the fact that an additional professor in education shall be recruited next year. However, looking at the publications of the staff members in charge of the educational programs, the peers could not find international peer reviewed articles of educational research. The peers highlighted that educational research and contributions to international peer reviewed articles is an essential step to become familiar with international theoretical educational literature.

The peers stick to their recommendations that consumable goods (e.g. chemicals needed for experiments) should be obtained without any delay and to make more student learning facilities available and increasing the opening hours of the library.

The peers concluded that this criterion was partly fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Appendix 5 – Module Handbooks for all degree programmes
- Subject specific websites:
 - Ba Biology: http://www.kaznu.kz/en/education_programs/bachelor/speciality/721 (accessed 20.12.2016)
 - Ba Biology (pedagogic): no specific website available
 - Ma Biology: http://www.kaznu.kz/en/education_programs/magistracy/speciality/878 (accessed 20.12.2016)
 - Ma Biology (pedagogic) http://www.kaznu.kz/en/education_programs/magistracy/speciality/994# (accessed 20.12.2016)
 - Ba Chemistry: http://www.kaznu.kz/en/education_programs/bachelor/speciality/726 (accessed 20.12.2016)
 - Ba Chemistry (pedagogic): http://www.kaznu.kz/en/education_programs/bachelor/speciality/725 (accessed 20.12.2016) - *however, website does not contain any information!*
 - Ma Chemistry: http://www.kaznu.kz/en/education_programs/magistracy/speciality/874 (accessed 20.12.2016)
 - Ma Chemistry (pedagogic): http://www.kaznu.kz/en/education_programs/magistracy/speciality/578 (accessed 20.12.2016)

Preliminary assessment and analysis of the peers:

The peers positively noted that the full set of modules descriptions had been made available to the peers for every degree programme under review; however, for the Master Chemistry the peers could not find the module description for the Module “Master Thesis”. The auditors confirmed that the module descriptions are accessible to all students and teachers via the online platform “Univer”; however, the module descriptions were

not available on the subject-specific websites and interested stakeholders have no access to the module descriptions.

Looking at the content of the module descriptions, the peers saw that the module descriptions contain most of the expected information like the title, the semester when the module takes place, the language and the responsible staff member and the lecturer. The workload and the credit points are consistently applied. It becomes clear how many ECTS credit points are applied and the exact amount of contact time and time for self study. The peers appreciated that for each module an extensive reading list is provided. The peers wondered how the partly huge number of books can be covered in the modules and learned that the teachers normally indicated only specific pages that should be covered; the peers considered this as acceptable. The recommended prerequisites are understandable and clear. The module objectives follow a consistent pattern of knowledge, ethical issues, analysis, synthesis, evaluation, application, group working, learning resources, self-evaluation, communication, problem solving, application of skills and autonomy in skills use. The peers were concerned about the amount of information which makes the module descriptions hard to read but agreed that interested stakeholders can decide themselves which kind of information is needed. In addition, the complete overview of the content is provided. The peers acknowledged that the University had put a lot of efforts into the development of these categories in the module descriptions as the content of these categories was not a simple “copy and paste exercise” but the content was related to the respective modules. The examination refers to all kinds of examinations that the students have to perform in this module. The module description states the teaching methods that are being applied. Group work, projects and other kinds of teaching method are clearly indicated. In summary, the peers concluded that the module descriptions provided a comprehensive amount of information which allowed interested stakeholders a profound comprehension of the module. Nevertheless, with regard to clarity to students, more concise and focused formulations may be helpful.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- § 36 METHODOLOGICAL RECOMMENDATIONS FOR THE DEVELOPMENT AND ISSUANCE OF THE EUROPEAN DIPLOMA SUPPLEMENT:
http://www.kaznu.kz/en/15266/page/Academic_process/Academic_policy/
(Accessed 20.12.2016)

- Appendix 6 - Sample Diploma Supplements for all degree programmes

Preliminary assessment and analysis of the peers:

The peers comprehended that after graduation both a degree certificate and a Diploma Supplement are issued. The peers could see that the exemplary documents for all degree programmes provided information on the student's qualifications profile and individual performance as well as the classification of the degree programme with regard to its applicable education system. The individual modules and the grading procedure on which the final mark is based are explained in a way that external stakeholders can comprehend. However, in addition to the final mark, statistical data as set forth in the ECTS User's Guide is not included in the Diploma Supplement to allow readers to categorise the individual degree. The peers ask the University to add this information to the Diploma Supplement.

Criterion 5.3 Relevant rules

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 5.3
- Academic policy of Al-Farabi Kazakh National University
- Standard rules for current progress control, midterm and final attestation of students in higher educational institutions
- Homepage of the University: <http://www.kaznu.kz/en/> (accessed 20.12.2016)

Preliminary assessment and analysis of the peers:

The peers confirmed that the rights and duties of the University, teachers and students are clearly defined and represented at www.kaznu.kz (Publications and Resources, Documentation) in documents related to academic policy, academic council, quality management system and normative documents on academic process. However, the rules of recognition of academic achievements need to be revised (compare criterion 1.4). All relevant course-related information is available in the language of the programme and accessible for anyone in “Univer” system; the subject specific websites provide only limited information on the different degree programmes. The peers underlined that all subject relevant information should be made available on the subject-specific websites.

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

The peers appreciated that information about the modules, the teaching staff and the learning objectives for all three degree programmes are now presented on the homepage of Al-Farabi Kazakh National University. However, the peers concluded that the description of the learning outcomes as presented in the Diploma Supplement should be used on the subject-specific websites.

A sample Diploma Supplement for each degree program was submitted but the peers noticed that it does not include statistical data about the final degree so that it is not possible to rank the individual performance of the student. Therefore, they ask Al-Farabi Kazakh National University to submit an appendix to the Diploma Supplement that includes statistical data about the final degree according to the ECTS-Users' guide.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Al-Farabi Kazakh National University, Self-Assessment Report for Cluster D, chapter 5.3
- Academic policy of Al-Farabi Kazakh National University
- Discussions with representatives of management, students, business representatives and teaching staff

Preliminary assessment and analysis of the peers:

The peers understood that Al-Farabi Kazakh National University has introduced a quality assurance and management system that supports each of its degree programs at the University administration, inter-department, and department levels. In 2005, the Al-Farabi Kazakh National University's quality management system successfully passed the ISO 9001:2000 certification processes and received the certificate of the international certification network IQNet. The quality assurance and management system includes surveys by the students, graduates and the teaching staff. The peers learned that each semester a survey is implemented by Al-Farabi's Centre for Sociological Research and Social Engineering in order to evaluate the study courses. Students grade anonymously their teach-

ers with 1 to 5 points on 25 categories concerning aspects such as study material, appearance of the teacher, corruption, teaching quality, relevance of content, etc. The peers asked if an English translation of the questionnaire might be provided in addition. The results are controlled by the Head of Department and regularly discussed with the respective teachers who always have access to all detailed results of their evaluations. A calculated average total grade is made public on the online platform “Univer” in order to guarantee transparency. If the general grade is below 3 a discussion with the chair is compulsory and improvement measures are agreed on. In this case the students are informed about the consequences of their survey. During the discussions with the students the peers were told that the students do not receive direct information about the results; however, they reported that they can see changes following their criticism which were an indication to the peers that feedback loops were in place. However, the peers underlined that the feedback loops with the students should be further improved.

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.

Furthermore, the University maintains close connections to alumni and business partners to take their feedback on-board for the refinement and further development of the degree programmes. The peers learned that an evaluation of alumni is being implemented presently. In the employer-board the faculty keeps a close contact to industry representatives involving them in the conceptualization of study programmes and curricula. Employers who employ graduates from the University receive a questionnaire from the University requesting information on the performance of the graduate which provides significant feedback on the degree programmes.

In summary, the peers confirmed that the quality management system is suitable to identify weaknesses and to further improve the degree programmes. All relevant stakeholders like students, teaching staff, alumni and business partners are involved in the process; however, the feedback loops particularly with the students could still be enhanced.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 6:

The peers understood that Al-Farabi Kazakh National University applies a number of surveys within its quality assurance system; it is evident that particularly the students are involved systematically. However, the peers keep up their recommendation that the stu-

dents could still further involved in the feedback loops. The peers see this criterion largely fulfilled.

D Additional Documents

Before preparing their final assessment, the panel ask 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:

1. Diploma Supplement and Module Handbook Ma Biology (pedagogic)
2. Ma Chemistry: Master thesis module description
3. English translation of the student survey questionnaire

All additional information was made available.

E Summary: Peer recommendations (01.03.2017)

Taking into account the additional information and the comments given by Al-Farabi Kazakh National University the peers summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN-seal	Maximum duration of accreditation
Ba Biology	With requirements	30.09.2022
Ba Biology (pedagogic)	Suspension/ With requirements	30.09.2022
Ma Biology	With requirements	30.09.2022
Ma Biology (pedagogic)	With requirements	30.09.2022
Ba Chemistry	With requirements	30.09.2022
Ba Chemistry (pedagogic)	With requirements	30.09.2022
Ma Chemistry	With requirements	30.09.2022
Ma Chemistry (pedagogic)	With requirements	30.09.2022

Suspension for Ba Biology (pedagogic)

Justification for suspension (bachelor biology degree (pedagogic)):

A development of an acceptable educational level of competence concerning didactical aspects is still not noticeable.

Conditions:

- a) (ASIIN 4.3) Provide a concept (including a timetable for implementation until the reaccreditation procedure) for upgrading the equipment in quantity and quality for the teaching and initial steps to its implementation must be taken.
- b) (ASIIN 1.3) Increase the laboratory based training including scientific questioning, performing experiments of every student by themselves, and further evaluating and critically discussing the results thereof.
- c) (ASIIN 1.3) Increase the didactical components in the educational programme so that the students can achieve the intended learning-outcomes.

OR

Accreditation with requirements and recommendations
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Requirements

- A 1. (ASIIN 1.1) Revise the programme objectives and learning outcomes with regard to the remarks made in the report and publish them on the website. For following aspects need to be revised:
- a) Ba Biology (pedagogic): Bio-ethical topics (awareness raising of bio-safety and environmental issues), competence in biology education (didactics).
 - b) Ma Biology (pedagogic): integration of theoretical perspectives in biology education (didactic).
 - c) Ba Chemistry (pedagogic): perspectives of chemistry education (didactics).
 - d) Ma Chemistry (pedagogic): Didactical and pedagogical theories, methodologies, and applications.
- A 2. (ASIIN 4.3) Upgrade the safety provision of laboratories according to ISO quality standards.
- A 3. (ASIIN 1.3; 3) Improve the introduction to scientific writing in a way that it is ensured that the final theses meet international academic standards.
- A 4. (ASIIN 3) Make sure that exams are competence-oriented including writing and oral skills.
- A 5. (ASIIN 5.2) Provide statistical data according to the ECTS-Users' guide in addition to the final grade.

For the bachelor degree programmes

- A 6. (ASIIN 4.3) Provide a concept (including a timetable for implementation until the reaccreditation procedure) for upgrading the equipment in quantity and quality for the teaching and initial steps to its implementation must be taken.

Bachelor Biology, Bachelor Biology (pedagogic)

- A 7. (ASIIN 1.3) Increase the laboratory based training including scientific questioning, performing experiments of every student by themselves, and further evaluating and critically discussing the results thereof.

A 8. (ASIIN 1.3) Provide a concept how to improve the expertise in biology education (research and teaching experience in school) among teaching staff.

For the Bachelor Biology (pedagogic)

A 9. (ASIIN 1.3) Increase the field-specific didactical components in the educational programme so that the students can achieve the intended learning-outcomes.

Possible Recommendations

E 1. (ASIIN 4.3) It is recommended ascertaining that consumable goods (e.g. chemicals needed for experiments) can be obtained without any delay.

E 2. (ASIIN 4.3) It is recommended making more student learning facilities available and increasing the opening hours of the library.

E 3. (ASIIN 6) It is recommended including students more actively into the feedback loops of the quality management system.

F Comment of the Technical Committees

Technical Committee 09- Chemistry (09.03.2017)

The Technical Committee discussed the procedure.

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee suggests using the standard wording for requirement number 4. Apart from this the Technical Committee follows the proposed requirements and recommendations as formulated by the peers.

The Technical Committee 09- Chemistry recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Maximum duration of accreditation
Ba Chemistry	With requirements	30.09.2022
Ba Chemistry (pedagogic)	With requirements	30.09.2022
Ma Chemistry	With requirements	30.09.2022
Ma Chemistry (pedagogic)	With requirements	30.09.2022

A 4. (ASIIN 3) Make sure that exams are competence-oriented including writing and oral skills.

Suggestion of Technical Committee 09: Better align the range of possible forms of examination with the intended learning outcomes of the respective module.

Technical Committee 10- Life Sciences (16.03.2017)

The Technical Committee discussed the procedure.

Assessment and analysis for the award of the ASIIN seal:

The technical Committee emphasizes that the technical equipment of the laboratories and the quantity and quality of the available laboratory working places in Biology is insufficient to successfully conduct scientific research at an adequate standard of a university. That is why the final theses of the biology programmes are written outside of the university. Due to this shortage the Technical Committee suggests adding two requirements with regard to the laboratories and the available capacity of laboratory working places. However, the Technical Committee concludes that the minimal standards of the degree programmes can be achieved and an improvement of the situation within the timeframe of fulfilment of requirements can be expected. Consequently the Technical Committee thinks that a suspension of the Biology programme is inappropriate. Furthermore the Technical Committee underlines that requirement number 9 should not be limited to the Bachelor Biology (pedagogic) but should also be extended to the Master Biology (pedagogic).

The Technical Committee 10- Life Science recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Maximum duration of accreditation
Ba Biology	With requirements	30.09.2022
Ba Biology (pedagogic)	With requirements	30.09.2022
Ma Biology	With requirements	30.09.2022
Ma Biology (pedagogic)	With requirements	30.09.2022

The Technical Committee suggests adding these two requirements:

For the all Biology programmes

A 1. (ASIIN 4.3) The equipment for the laboratories must be updated so that students are able to carry out practical work in labs independently.

A 2. (ASIIN 4.3) There must be sufficient laboratory space to provide all students with a fully equipped working place. New laboratories where the students can do their practical work and where they and the teachers can do basic research and follow individual projects must be established.

For the Bachelor and (FA 10 suggests including the Master programme) Master degree programmes Biology (pedagogic)

A.3 (ASIIN 1.3) Increase the field-specific didactical components in the educational programme so that the students can achieve the intended learning-outcomes.

G Decision of the Accreditation Commission (31.03.2017)

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

The Accreditation commission discussed whether it is realistic that the University can improve the laboratories to an acceptable standard within the timeframe of one year and concluded that this will depend on the financial means that are being made available. However, as the University has only to provide a financial plan and timetable, the Commission concluded that the University could be able to develop this and decided that the Bachelor Programme Biology (pedagogic) does not need to be suspended. The Accreditation commission followed the suggestion of Technical Committee 9 and used the standard formulation for requirement number 4. Furthermore, the Accreditation Commission concluded that the upgrading of laboratory equipment was required for all programmes and should not be limited to the bachelor programmes only. The Commission merged requirement 5, 6 and 7 because they all belong together and requirements 6 and 7 further explain the issues that need to be solved. Finally, the commission reformulated requirement number 9. Except from these changes, the Commission followed the assessment of the peers and the Technical Committees.

The Accreditation Commission for Degree Programmes decides to award the following seals:

Degree Programme	ASIIN-seal	Maximum duration of accreditation
Ba Biology	With requirements for one year	30.09.2022
Ba Biology (pedagogic)	With requirements for one year	30.09.2022
Ma Biology	With requirements for one year	30.09.2022
Ma Biology (pedagogic)	With requirements for one year	30.09.2022
Ba Chemistry	With requirements for one year	30.09.2022
Ba Chemistry (pedagogic)	With requirements for one year	30.09.2022

Degree Programme	ASIIN-seal	Maximum duration of accreditation
Ma Chemistry	With requirements for one year	30.09.2022
Ma Chemistry (pedagogic)	With requirements for one year	30.09.2022

Requirements

For all Degree Programmes

- A 1. (ASIIN 1.1) Revise the programme objectives and learning outcomes with regard to the remarks made in the report and publish them on the website. The following aspects need to be revised:
- Ba Biology (pedagogic): Bio-ethical topics (awareness raising of bio-safety and environmental issues), competence in biology education (didactics).
 - Ma Biology (pedagogic): integration of theoretical perspectives in biology education (didactic).
 - Ba Chemistry (pedagogic): perspectives of chemistry education (didactics).
 - Ma Chemistry (pedagogic): Didactical and pedagogical theories, methodologies, and applications.
- A 2. (ASIIN 4.3) Upgrade the safety provision of laboratories according to ISO quality standards.
- A 3. (ASIIN 1.3; 3) Improve the introduction to scientific writing in a way that it is ensured that the final theses meet international academic standards.
- A 4. (ASIIN 3) Better align the range of possible forms of examination with the intended learning outcomes of the respective module.
- A 5. (ASIIN 5.2) Provide statistical data according to the ECTS-Users' guide in addition to the final grade.
- A 6. (ASIIN 4.3) Provide timetable and a reliable financial plan for upgrading the equipment and initial steps to its implementation must be taken. The equipment for the laboratories must be updated so that students are able to carry out practical work in labs independently. There must be sufficient laboratory space to provide all students with a fully equipped working place. New laboratories where the students can

do their practical work and where they and the teachers can do basic research and follow individual projects must be established.

Bachelor Biology, Bachelor Biology (pedagogic)

- A 7. (ASIIN 1.3) Increase the laboratory based training including scientific questioning, performing experiments of every student by themselves, and further evaluating and critically discussing the results thereof.
- A 8. (ASIIN 1.3) Provide more qualified teaching capacity as well as training opportunities for existing staff.

For the Bachelor and Master degree programmes Biology (pedagogic)

- A 9. (ASIIN 1.3) Increase the field-specific didactical components in the educational programme so that the students can achieve the intended learning-outcomes.

Recommendations

- E 1. (ASIIN 4.3) It is recommended ascertaining that consumable goods (e.g. chemicals needed for experiments) can be obtained without any delay.
- E 2. (ASIIN 4.3) It is recommended making more student learning facilities available and increasing the opening hours of the library.
- E 3. (ASIIN 6) It is recommended including students more actively into the feedback loops of the quality management system.

Appendix: Programme Learning Outcomes and Curricula

According to the website the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Biology:

Profile subject: Biology

“Purpose and learning outcomes:

The purpose of the educational program is to form basic knowledge which are necessary for mastering of professional disciplines; the formation of theoretical and practical knowledge and skills needed to implement them in their professional activities; formation of human, social and personal values of the graduate; formation of ecological, ethical, legal culture, the culture of thinking and preparation of highly qualified specialists, capable to adapt in the changing conditions of education and science at the state level and the international community, to continue learning throughout life.

The objectives of the educational program - providing the professional knowledge and practical skills in the field of biology and provide students the choice of individual programs in the field of education; providing basic knowledge of the natural and scientific, general technical and economic considerations, as a foundation for professional education.

The bachelor should:

have an idea: on the basic knowledge of natural science (social, humanitarian and economic) disciplines, contributing to the formation of a highly educated person with a broad outlook and culture of thinking;

know: methodological bases use of biological objects and the basics of using biological systems and processes in various sectors of the economy; be prepared for the formulation and study of new issues from various areas of modern biology, as well as to know the current state and prospects of development of biological science.

be able to: simulate the biological processes used in biology and own methods of qualitative and quantitative analysis of biological phenomena and events; to carry out a computer search method of collecting, storing and processing information - use the knowledge gained in the laboratory and industrial conditions; implement the promotion of biological knowledge and management decisions at different levels of industrial activity.

possess: the methods of biological research and have professional flexibility, ability to work in research and educational teams; possess a common methodology of professional activities and the development of professional creativity and skill with modern technology, to be able to use information technology in the field of professional activity.

to be competent in: conducting biological research, the implementation of educational activities and work in the public administration of the respective profile.”

The following **curriculum** is presented:

According to the website the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Biology (pedagogic):

According to the website the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Biology:

“Aim of program

Preparation of master course students to conducting of scientific researches, improving and developing of theories and methods of biological processes; to practical application of obtained knowledge in different areas of economics (industry, medicine, agriculture, education) related to taxonomic identification of flora and fauna, cytological, histological, genetical, microbiological, immunological, biophysical methods of analysis in various scientific areas, improving and developing of innovative technological processes being applied in industrial areas.

Professional activity Master of biological sciences, master of environmental biological monitoring, master-embryologist, master-histologist, master-zoologist; master-botanist, master-cytologist, master-biophysicist, master-genetics, master-microbiologist, master-biochemist, master of molecular biology, master of specific biodiversity of living universe, master-physiologist.

The competence of graduates of programs:

1. Knows methodological approaches, principles, concepts, theories and methods of pedagogy and psychology of higher education; owns the methods of scientific research, able to formulate new goals and achieve new results in the field of pedagogy and psychology of higher education;

2. Possesses techniques of modern educational technologies, ways of organizing teaching and learning activities; innovative techniques , forms and methods of knowledge control in education; able to generate multiple solutions and taking decisions, possesses management skills ; is able to extract and analyze information from different sources;
3. knows the basics of information and
4. communication technologies in the educational and scientific processes; able to make out the results of research in the form of scientific articles and presentations of scientific reports;
5. owns the methodology of theoretical biology and applies the theoretical knowledge in practical and research activities;
6. knows the basics of fundamental sciences that underpin modern biology , understands the essence of progressive methods and technologies in professional activity specialist- biologist.
7. able for the selection of the priorities of educational and research activities
8. able to synthesize, organize and productive use of scientific data on biology, the principles and structure of the organization of scientific activity.

The following **curriculum** is presented:

According to the website the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Biology (pedagogic):

“PROFILE AND EDUCATIONAL OBJECTIVES:

- Provide training in biology at the highest academic standards in a competitive educational environment, attractive to the best students from Kazakhstan and other countries.
- To provide students a systematic knowledge of the fundamental courses of biology, based on a solid experimental and theoretical basis, along with the knowledge of the elective areas, based on the latest biological and pedagogical sciences.
- Development of system skills related to problem solving, critical evaluation and interpretation of the original experimental data.
- Development by the end of training students' ability to make a confident choice for future professional activities, and to successfully find employment in their chosen field.

- Graduates should acquire in-depth knowledge of modern biophysics, physiology and chronobiology, the morphology of humans and animals, as well as to be able to carry out a critical analysis of the state of current research in the field of biology.
- Graduates must complete a major research project, which requires the possession of the theory and methods of staging and biophysical, physiological and morphological studies and experiments that provide original result and the novelty of the research.
- Graduates should be prepared to learn for a degree in any leading university in Kazakhstan or other countries, or for a professional career related to the conduct of research in the sectors of industry, based on the application of biological knowledge and pedagogical work in higher education institutions of Kazakhstan or abroad.

Graduates of the master's program must:

- have in-depth knowledge of the system and be able to critically evaluate the problems, approaches and trends that reflect the current state of biological science, research and the scope of professional practice;
- understand and use the methods and techniques that are applicable to their own research and modern scientific research;
- be able to find the original application of existing knowledge, along with a practical understanding of how existing methods of research and analysis applies in the relevant science for the creation and interpretation of new knowledge;
- have a systemic understanding, allowing critically evaluate current research and theory in the field of scientific knowledge;
- be able to assess the methodological approaches, to exercise their critical analysis and if necessary, propose new hypotheses;
- demonstrate a systematic and creative approach to solving complex problems, be able to make informed judgments in the absence of complete data and effectively present their findings, both for professionals and for audiences who do not have adequate training;
- demonstrate independence and original approach to solving problems, to plan and solve problems in a professional manner;
- develop and deepen their knowledge and acquire new skills in a professional manner;
- have the personal qualities and skills needed for successful employment and requiring initiative and personal responsibility, problem-solving skills in complex and unpredictable situations, the ability to self-directed learning for continuing professional development;

- have a view of the modern achievements of science on society, history, spiritual and material culture, philosophy and methodology of scientific work, to freely navigate in a foreign environment and to conduct professional activities in a foreign language;
- to work with the special literature, writing research papers, give talks, participate freely in discussions, to conduct a teaching job;
- have sufficient knowledge in the field of psychology and sociology, providing the opportunity to work in a team and, if necessary, to guide them.”

According to the website the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Chemistry:

“Profile subject: Chemistry

Purpose and results of training:

The purpose of the educational program - Preparation of highly qualified specialists of chemists and researchers with knowledge and competences in demand for work in the chemical and adjacent industry sectors, as well as scientific research institutes, laboratories chemical profile.

The tasks of the educational program:

- give students the fundamental theoretical knowledge for subsequent scientific research work in the field of chemistry and chemical technology, as well as related industries of the economy;
- the formation of skills independent work scientific research and teaching activities in the field of chemistry and chemical technology;
- give practical skills to solve the specific theoretical and experimental tasks in the field of chemistry and chemical technology;
- familiarize students with the modern status and development trends of chemistry and chemical technology.

Bachelor should have an idea:

- about the present state chemical science;
- about the requirements for chemical production and chemical products.

know:

- basic laws of chemistry and of chemical technology, as well as allied sciences;

- principles for solving theoretical and applied tasks of chemistry and chemical technology.

be able to:

- base the planning industrial and technological processes in the chemical branches of economy and industry;
- To use in practical activities the basic laws of chemistry and chemical technology;
- organize on a scientific basis labor activity.

to own:

- the methods of planning and organization of scientific research in the field of chemistry and chemical technology;
- modern information technology search, collection, storage and processing of information;
- use of the skills of laboratory chemical equipment.

to be competent:

- modern problems of in chemistry and chemical technology.

possess:

- knowledge and competences in demand for work in the chemical and related branches of industry, as well as laboratory the chemical profile.”

According to the information in the self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Chemistry (pedagogic):

Learning Outcomes of Programme specified in terms of performance capabilities to be shown on completion of the programme/pathway.

Students will have developed an in-depth understanding of a complex body of knowledge including some knowledge at the forefront of the scientific discipline being studied. They will be able to evaluate evidence, alternative viewpoints and assumptions in order to draw conclusions and to communicate their findings effectively. Graduates will possess the ability to exercise personal responsibility for decisions made based on complex information. Also programme graduates must become highly-qualified chemistry specialists who will know theoretical and practical basics of inorganic, analytic, organic, and physical chemistry, chemical technology, physical methods of research, quantum me-

chanics and computer chemistry, as well as have profound knowledge about one of the narrower fields of chemistry, and modern methods of scientific research; graduates must possess fundamental social and humanitarian knowledge that will improve their general intelligence and help them master humanitarian culture of thinking, literate and developed speech, as well as effective labour management skills, and be familiar with basics of law; graduates must develop their creative potential, initiative and innovation to ensure their competitiveness at the labour market, and strive for furthering education and improving professional competence.

Programme outcomes having specific reference to benchmark statements are indicated. Upon successful completion of the programme the student will have demonstrated a progression from the lower levels of knowledge and comprehension, through application and analysis, ultimately to add the ability for critical evaluation and synthesis in relation to:

Knowledge and Understanding

Upon successful completion of the programme the student will have demonstrated:

1. The ability to report distills, apply, and evaluate essential facts, concepts, principles and theories of chemistry.
2. The ability to recognize and evaluate issues at the frontiers of chemical research and development.
3. The ability to report, analyses, and appraises chemical information and data from a range of sources.
4. The ability to recognize and apply chemical principles in specialized sub-areas.

Intellectual Skills

Upon successful completion of the programme the student will have demonstrated:

1. The ability to recognize, and analyze novel problems and plan and implement strategies for their solution.
2. The ability to apply chemical knowledge and understanding to the solution of qualitative and quantitative problems.
3. The ability to plan and devise laboratory experiments ranging from simple tests to advanced projects.
4. The ability to summarize, evaluate and synthesize information and data from experimental and literature sources.

5. The ability to interpret and reports results obtained from laboratory observations and measurement and relate them to underlying theory.
6. Practical Skills
7. Upon successful completion of the programme the student will be able to:
8. Undertake risk assessments concerning the use of chemical substances and laboratory procedures.
9. Perform a range of standard and advanced laboratory procedures safely according to the Health and Safety at Work act.
10. Conduct with accuracy and precision a range of standard and advanced laboratory techniques and obtain the results thereof.
11. Systematically and accurately obtain and record measurements and observations during experimentation.
12. Operate safely and efficiently a selection of standard and advanced scientific instrumentation.

Transferable/Key Skills

Upon successful completion of the programme the student will be able to demonstrate:

1. Communication skills, both written and oral.
2. Problem solving skills, both qualitative and quantitative including those where evaluation is required on the basis of limited information.
3. Numerical and computational skills.
4. Information retrieval skills, including from hard copy, on-line and web-based sources.
5. A broad range of IT skills, including word-processing and use of spreadsheets.
6. Interpersonal and interactive skills such as team-working.
7. Find the most appropriate way to transfer knowledge to students and pupils, depending on background level of them.
8. Time-management and organizational skills.
9. A range of study skills appropriate to continuing professional development.

Upon successful completion of the programme the student will be competent in the field of inorganic, analytical, organic, physical, colloidal, and ecological chemistry, chemistry of polymers and chemical physics, catalysis and petroleum chemistry, chemistry of naturally occurring compounds and rare elements.”

According to the website the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Chemistry:

“Purpose and results of learning:

The purpose of the educational program - provide training Masters in speciality "chemistry" in accordance with existing international standards and requirements of the quality of training in a competitive and stimulating educational environment. Create the necessary conditions of compliance training in the chemical content of the educational program "research chemistry" by common quality criteria. To promote the creation of a competitive and attractive educational society in order to attract to studying in "research chemistry" best applicants from countries near and far abroad;

Tasks of the educational program:

- to provide students systematic knowledge of the core courses of chemistry research, based on knowledge of the theory and practice of chemistry, advanced experimental techniques, organic and Applied Chemistry based on the latest achievements of science and technology;
- to form a system skills related to problem solving research chemistry, ability to critically evaluate the original data, the ability to media interaction of students in solving their tasks;
- promote the practical skills of the experiment on the main areas of research chemistry, related to the theory and practice of chemistry, modern methods of Experimental and Applied Organic Chemistry, the use of computational methods for processing of experimental data based on the use of advanced technologies;
- contribute to the formation of undergraduates at the end of training skills to perform certain selection of the direction their future careers and employability in main areas of research chemistry.

Graduates of the Master's educational program "research chemistry" must:

- acquire in-depth knowledge of the main areas of research chemistry, to be able to carry out a critical analysis of the state of current scientific research;
- carry out serious scientific research in the form of a thesis, which requires in-depth theoretical and practical knowledge and skills to ensure receipt of the original results in the form of products, technologies, scientific research and projects;
- have the ability and willingness to continue training with a view to obtaining a degree at the national and at the international level, to be prepared for a professional career related to the conduct of research in the sectors of industry, based on the application of knowledge in main areas of research chemistry.”

According to the website the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Chemistry (pedagogic):

“PROFILE AND EDUCATIONAL OBJECTIVES

configure the system

- Knowledge of the nature, society and thought;
- Intellectual and experimental skills;
- The experience of creative relations;
- Experience of emotionally-value relations,

which is an integrative form is a set of basic and professional competence to continue their studies in the profile or academic doctorate in chemistry and teaching professions or work on teaching or equivalent positions in the education system of the Republic of Kazakhstan or abroad, successfully competing in the labor market.

Graduates of the master's program must:

- Have a system of modern knowledge about nature, society and thought (facts, concepts, laws, theories, concepts, etc.);
- To have the intellectual and experimental skills and abilities that enable you to professional responsibilities;
- Have experience in creative activities, allowing to maintain the present level of scientific research in the field of chemistry;
- Have experience of emotional value relations allowing to critically evaluate the processes in society;
- Possess the methodology of scientific and chemical research and teaching in the field of chemistry and methods of teaching chemistry in high schools;
- Know the trends in education (especially chemical education) in the world and to take into account in their work;
- Be able to formulate a goal and make a selection of the content, forms, methods, tools and technology education chemistry course in high schools;
- Know and be able to practice modern system of assessing the educational achievements of pupils and students;
- To be able to use computers and modern information technology for advanced user;

- Know the requirements for modern educational-methodical complex of disciplines and be able to make them;
- Know the principles of modern time management and be able to use them to organize their activities.
- Development of new concepts of chemical education in connection with the entry of the Republic of Kazakhstan in the international educational space (the Treaty of Lisbon, the Bologna process, the transition to the 12-year-old school, etc.);
- Development of scientific basis of new state standards and model curricula chemical specialties;
- Development of principles and criteria for the selection of educational content required and elective courses in accordance with the requirements of the new state standards of higher and postgraduate education;
- Development of scientific and teaching the basics of building textbooks and the new generation (including electronic), their relationship with the newest technologies, including the Internet;
- Development of new forms, methods, tools and technologies (including remote) training of chemical disciplines in higher education;
- Development of scientific basis of new systems of assessing educational achievements of pupils and students in the transition to a competence-based approach learning;
- The development of teaching materials of new elective courses in chemistry in accordance with the goals and objectives of the strategic development program of the Republic of Kazakhstan in the field of education;
- Statement of teaching and conducting experiments to determine the effectiveness of new forms, methods, tools, and technology education in the field of chemical education.

Topics of Master's theses in these areas:

- Development and use of e-training complex in chemistry-based module-rating system for evaluation of educational achievements;
- Education and teaching students of chemical specialties universities create e-learning resources in chemistry;
- Integration of experimental chemical skills of students (for example, chemistry and biology);
- Development of information and mathematical competence of university students in learning chemistry with complex applications;
- The selection of content, forms, methods, tools, and evaluation of educational achievements of students in teaching an elective course (the course names):

- The selection of content and the choice of technology training module "Chemistry and sources of energy";
- The selection of content and technology of designing an electronic textbook on inorganic chemistry (for example, one module);
- Development of system issues, problems and exercises in the course of "Inorganic Chemistry" for independent work of students (SES)."