ASIIN Accreditation Report

Bachelor's Degree Programme and Master's Degree Programme

- **Biotechnology**
- **Fish Industry and Industrial Fishery**
- **Master's programme Geobotany**

Provided by

al-Farabi Kazakh National University

Version: 01st July 2016

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A About the Accreditation Process

Title of the degree Programme	Labels applied for [1]	Previous ASIIN accreditation	Involved ASIIN-Technical Committees (TC)[2]
Bachelor of Science - Biotechnology	ASIIN seal	n/a	10
Master of Science – Biotechnology	ASIIN seal	n/a	10
Bachelor of Agricultural Sciences - Fish industry and industrial fishery	ASIIN seal	n/a	08, 10
Master of Agricultural Sciences - Fish industry and industrial fishery	ASIIN seal	n/a	08, 10
Master on the speciality Geobotany	ASIIN seal	n/a	10

Date of the contract: 20.09.2013

Submission of the final version of the self-assessment report: 17.02.2014

Date of the onsite visit: 09.-10.09.2014

at: al-Farabi Kazakh National University, Main Campus, Faculty of Biology and Biotechnology, Department of Biotechnology

Peer panel:

Prof. Dr. Bodo von Bodungen, Leibniz Institute for Baltic Sea Research, Warnemünde

Prof. Dr. Dušan Palić, Ludwig-Maximilians-University of Munich

[1] ASIIN Seal for degree programmes;
[2] TC: Technical Committee for the following subject areas: TC 05 – Physical Technologies, Materials and Processes; Architecture; TC 09 – Chemistry; TC 13 – Physics.

Dipl.-Biol. Dr.rer.nat.habil. Christian Berg, University of Graz Hans Kuhn, Altona Diagnostics, Hamburg Yekaterina Astafyeva, South-Kazakhstan State University, Shymkent (student representative)
Representatives of the ASIIN headquarter: Mila Zarkh
Responsible decision-making committee: ASIIN Accreditation Commission for Study Programmes
Criteria used: ESG - Standards and Guidelines for Quality Assurance in the European Higher Education Area as of 2009 (third edition) ASIIN General Criteria, as of 17.04.2013 ASIIN Subject-Specific Criteria of Technical Committee 08 - Agronomy, Nutritional Science and Landscape Architecture ASIIN Subject-Specific Criteria of Technical Committee 10 – Biosciences

In order to facilitate the legibility of this document, only masculine noun forms will be used hereinafter. Any gender-specific terms used in this document apply to both women and men.

B Characteristics of the Degree Programmes

a) Name & Final Degree	b) Areas of Specialization	c) Mode of Study	d) Duration & Credit Points	e) First time of offer & Intake rhythm	f) Number of students per intake	g) Fees
Bachelor of Science - Biotechnology	Biotechn. of micro-organisms; Cell and molecular biotechn.; Food Bio-techn.; Genetics Technology; Biotechn. of environment	Full time	8 semester – 152 Kazakh credits (6840 hours: 252 ECTS)	Since fall 2008, starting annually	110-120 per semester (since 2011/2012: 150-170 per semester)	620 000 kzt or 3 100 €
Master of Science – Biotechnology	Biotechn. of micro-organisms; Cell and molecular biotechn.; Food Bio-techn.; Genetics Technology; Ecological Biotechn.	Full time	4 semester – 63 Kazakh credits (2835 hours: 104 ECTS)	Since fall 2008, starting annually	15 - 30 per semester	650 000 kzt or 3 250 €
Bachelor of Agricultural Sciences - Fish industry and industrial fishery	Aquaculture; Hydrobiology and Ichtiology	Full time	8 semesters – 156 Kazakh credits (7020 hours: 259 ECTS)	Since fall 2010, starting annually in the fall term	25 - 45 per semester	700 000 kzt or 3380 € For foreign students: 752000 kzt or 3630 €
Master of Agricultural Sciences - Fish industry and industrial fishery	Information on electives not available	Full time	4 semesters – 59 Kazakh credits (2655 hours: 97,9 ECTS)	Since fall 2011, starting annually in the fall term	Ca. 10 per semester	750000 kzt or 3 620 € For foreign students: 800000 kzt or 3 860 €

Master on the speciality Geobotany	Geobotanical Research; protection of plants	Full time	4 semesters - 59 Kazakh credits (2655 hours: 99 ECTS)	Since 2010, starting annually	5 - 12 per semester	750000 kzt or 3 620 € For foreign students: 800000 kzt or 3 860 €

For the Bachelor's degree programme "Biotechnology" the self-assessment report states the following **intended learning outcomes**:

I. **Knowledge**

1. Know theoretical basics of fundamental sciences as relevant to his (her) profession and specialization; essence, mechanisms and regularities of vital processes of organisms (microorganisms, plants, animals); main achievements and development trends of modern biology and biotechnology;
2. Know theoretical and practical foundations of Plant Biotechnology, Animal Biotechnology, Biotechnology of Microorganisms; the main technologies of producing biotechnological products; main concepts, techniques and prospects of the development of Biotechnology;
3. Knowledge about methodology of the biotechnology science, modern problems of biotechnology;
4. Be aware of biological processes, occurring in vivo or in vitro conditions, their interrelationships and interdependencies; biodiversity of animal and plant organisms, the basic principles of environmental protection and management;

II. **Understanding**

1. Understand the basic laws governing the interaction of living organisms and the environment in practical activities to ensure the sustainable development;
2. To consider the classification peculiarities of morphology, physiology and reproduction; ecology of representatives of major taxons; principles of systemic structuring, differentiation and integration of organisms;
3. Describe the design and operation principles of modern biotechnological laboratory and production equipment;
4. Understand general scientific methodology of the biological and technical science;

3. Application

1. Apply practical skills of cultivating cells and tissues different organisms based on knowledge of biochemistry and physiological processes of microorganisms, plants and animals.
2. Apply the received practical skills and theoretical knowledge in their scientific research and in industry. Chose forms, methods and means of collecting information
3 . Demonstrate audit procedures and solutions to achieve the objectives

4 . Illustrate the results of research activity
5 .Interpret the theoretical aspects of the basic terms of biology
6. Apply the modern information technology in Biotechnology and Bioinformatics, using modern computer methods for information collection, storage and use;
7. Solve situational problems on practical materials laboratories
8. Be capable to organize joint activities, participate in corporate decision-making and defend own viewpoint;

4. Analysis

1. Analyze and interpret the results of field and experimental studies
2. Applying methods of creating and using models to describe and forecast different processes and phenomena, at the same time carrying out their qualitative and quantitative analysis and synthesis
3. Analyze the information retrieval and methodical problems in various fields of biotechnology
4. Analyze, plane, organize and conduct scientific studies; use the knowledge of higher education psychology and pedagogy in practical activities;

5. The synthesis

1. Create a strategy for the analysis of work processes and phenomena in the modern BiotechIndustry
2. Develop systematic renovation of knowledge during professional activities, including active search for and use of new information
3. Develop a program plan for control and monitoring of production
4. To organize conferences, special courses and seminars on issues of BiotechIndustry and biotechnological lab
5. Propose possible scientific methods of learning to achieve goals

6. Evaluation

1. Discuss the modern system of organizing and financing scientific research
2 . Choose costing methods that are acceptable to the specific industry
3 . Protect the received digital data , applied methods and techniques
4. Be competent in all aspects of modern biological and technical knowledge, in solving applied and problematic issues of modern biotechnology, in environmental protection legislation, in organizing scientific studies as well as presenting and processing scientific results, in searching and exchanging scientific information, in basics of the information science and computerization of scientific research, in psychological and pedagogical principles of higher education, including on the basics of new technologies.

The following **curriculum** for the Bachelor's degree programme "Biotechnology" is presented:

Title of modules	Course code	**Title of courses**	CP	**Unit/ ECTS**	**Lec/ prac/ Lab**	**Sem**
Semester 1						
1. State Compulsory Module	HRK 1101	History of the Republic of Kazakhstan	2	3.32	1/1/0	1
	K(R)LPP 1102	Kazakh (Russian) Language for Professional Purposes	3	4.98	0/3/0	1
	FLPP 1103	Foreign language for professional purposes	3	4.98	0/2/1	1
3.1 Natural Sciences(STEM) module	Mat1304	Mathematics	3	4.98	2/1/0	1
Vocational Modules	3.2. BasicProfessionalModules					
	Module 1. General Chemistry and Biochemistry		**6**			
	IHim 1401	Inorganic Chemistry	3	4.98	2/0/1	1
	AHim 1402	Analitical Chemistry	3	4.98	2/0/1	1
Semester 2						
3.1 Natural Sciences(STEM) module	Fiz 1303	Physics	3	4.98	2/0/1	2
3. Vocational Modules	BasicProfessionalModules					
	Module 1. General Chemistry and Biochemistry					
	LBS 1403	Lowmolecular biological substances	3	4.98	2/0/1	2
	Module 2. Biodiversity of Plants, Animals and Microorganisms					
	BP 1405	Biodiversity of Plants	3	4.98	2/0/1	2
	BA 1406	Biodiversity of Animals	3	4.98	2/0/1	2
	MV 1407	Microbiology and Virology	3	4.98	2/0/1	2
	Module 3.Cell Biology and Basics of Physiology					
	CTB 1408	Cell and Tissue Biology	3	4.98	2/0/1	2
4. Practice	PP	**Professional practice**				
	EP 101	Educational Field Practice	4 2 weeks			
6. Additional Types ofLearning	6.1	Physical Training	8	13.28	0/0/2	1,2,3,4
Semester 3						
Name ofmodules	Disciplinecode	**Title of courses**	CP	**Unit/ ECTS**	**Lec/ prac/ Lab.**	**Sem**
2. Social andCommunicative	PIC 2201	Psychology of Interpersonal Communication	2	3.32	1/1/0	3
	TAPS 2202	Theoreticaland AppliedPolitical Science	2	3.32	1/1/0	3
	EPSS 2203	Ethicsof Personal andSocial Success	2	3.32	1/1/0	3

Module (4credits)	CR 2204	Culture and Religion	2	3.32	1/1/0	3
	GAS 2205	General andApplied Sociology	2	3.32	1/1/0	3
	HLS 2206	Human Life Safety	2	3.32	1/1/0	3
	ESD 2207	Ecology and Sustainable Development	2	3.32	1/1/0	3
	KL 2208	Kazakhstan Law	2	3.32	1/1/0	3
	FE 2209	Fundamentals of Economics	2	3.32	1/1/0	3
3.1 Natural Sciences**(STEM)** module	ITB 2301	Informational Technologies in Biotechnology	3	4.98	2/0/1	3
3.Vocational Modules	**3.2.** BasicProfessionalModules					
	Module 1. General Chemistry and Biochemistry					
	Bio 2404	Biochemistry	3	4.98	2/0/1	3
	Module 3.Cell Biology and Basics of Physiology				4.98	
	BMF 2409	Basics of Microorganisms Physiology	3	4.98	2/0/1	3
	Module 4. General genetics and Biostatistics					
	GMG 2412	General and molecular genetics	3	4.98	2/0/1	3
Semester 4						
Name ofmodules	Disciplineco de	**Title of courses**	CP	**Unit/ ECTS**	**Lec/ prac/ Lab**	**Sem.**
State Compulsory Module	**FSK 2104**	Philosophyof Scientific Knowledge	2	3.32	1/1/0	4
Vocational Modules	***Module 2. Biodiversity of Plants, Animals and Microorganisms***				CC	
	BAF 2410	Basics of Animal Physiology	3	4.98	2/0/1	4
	BPF 2411	Basics of Plant Physiology	3	4.98	2/0/1	4
	BAF 2410	Basics of Animal Physiology	3	4.98	2/0/1	4
	Module 5. Basics of Biotechnology					
	BMB 2414	Basics of Microorganisms Biotechnology	2	3.32	1/0/1	4
	BPB 2415	Basics of Plant Biotechnology	2	3.32	1/0/1	4
	BAB 2416	Basics of Animal Biotechnology	2	3.32	1/0/1	4
	Module 6. Molecular biology and Genetic engineering					
	MB 2417	Molecular biology	3	4.98	2/0/1	4
4. Practice	PT 202	Practice Training	1	1.66		4
Semester 5						
3.1 Natural Sciences**(STEM)**	BFiz 3302	**Biophysic**	3	4.98	2/0/1	5

module						
Vocational Modules	**3.2.** BasicProfessionalModules					
	Module 7. Industrial and Food Biotechnology					
	BBI 3419	Basics of biotechnological Industry	3	4.98	2/0/1	5
	IB 3420	Industrial Biotechnology	2	3.32	1/0/1	5
	FB 3421	Food Biotechnology	3	4.98	2/0/1	5
	Module 8. Methodology and Biotechnology of Animals and Plants					
	MAB 3422	Methodology of Animal Biotechnology	2	3.32	1/0/1	5
	MAB 3422	Methodology of Animal Biotechnology	2	3.32	1/0/1	5

3.3 Modules forIndividual EducationalTrajectories **(IET)**								
IET 1: «Biotechno-logy of micro-organisms»	IET 2: «Cell and molecu-lar biotechno-logy»	IET 3: "Food biotechnolo-gy"	IET 4: "Genetics technology"	IET 5: "Biotechno-logy of Environme-nt"				
SW 3501 Scientific writing (kaz/rus/engl) 0/1/0	SW 3501 Scientific writing (kaz/rus/engl) 0/1/0	SW 3501 Scientific writing (kaz/rus/engl) 0/1/0	SW 3501 Scientific writing kaz/rus/engl 0/1/0	SW 3501 Scientific writing kaz/rus/engl 0/1/0	1	1.66		5
BLRB 3502 Basics of Lab research in biotechnology 1/0/1	BLRB 3502 Basics of Lab research in biotechnolo-gy 1/0/1	BLRB 3502 Basics of Lab research in biotechnolo-gy 1/0/1	BLRB 3502 Basics of Lab research in biotechno-logy 1/0/1	BLRB 3502 Basics of Lab research in biotechno-logy 1/0/1	2	3.32		5
EB 3503 Ecology bio-technology 2/0/1	EB 3503 Ecology biotechnolo-gy 2/0/1	EB 3503 Ecology biotechnolo-gy 2/0/1	EB 3503 Ecology biotech-no-logy 2/0/1	EB 3503 Ecology biotechno-logy 2/0/1	3	4.98		5
PEB 3504 Processes and equipment in biotechnology 2/0/1	CB 3504 Cell Bio-technology 2/1/0	FBAS 3504 Food biologi-cal active supplements 2/0/1	MGBB 3504 Molecular-genetical basics of Biotechno-logy 2/1/0	BGT 3504 Biogeotech-nology 2/1/0	3	4.98		5
Semester 6								

Vocational Modules	***Module 4. General genetics and Biostatistics***					
	BS 3413	Biostatistics	3	4.98	1/1/1	6
	Module 6. Molecular biology and Genetic engineering					
	GI 3418	Genetic engineering	3	4.98	2/1/0	6
	Module 8. Methodology and Biotechnology of Animals and Plants					
	BHPA 3423	Biotechnology of Higher Plants and Algae	2	3.32	1/0/1	6
	Module 9.Medical biotechnology					
	MB 3424	Medical biotechnology	3	4.98	2/1/0	6
	Module 10. Methods of biology teaching					
	MBT 3425	Methods of biology teaching	3	4.98	2/0/1	6

3.3 Modules forIndividual EducationalTrajectories **(IET)**								
IET 1: «Biotechnology of micro-organisms»	**IET 2: «Cell and molecular biotechnology»**	**IET 3: "Food biotechnology"**	**IET 4: "Genetics technology"**	**IET 5: "Biotechnology of Environment"**				
BASA 3505 Biotechno-logy of Antiinfection Solutions Acquiring 2/0/1	Enz 3505 Enzymology 2/1/0	TRPP 3505 Technologies of receiving of plant-growing products 2/0/1	RG 3505 Radiation genetics 2/1/0	EG 3505 Ecology genetics 2/1/0	3	4.98		6
MCBP 3506 Microbial control of biotechnology production 2/0/1	MRMB 3506 Modern research methods in Biotechnol-ogy 2/0/1	TB 3506 Technical biochemistry 2/0/1	BGA 3506 Basics of genetics analysis 2/0/1	EBFM 3506 Ecology bio-technology of phototrofics microorga-nisms 2/0/1	3	4.98		6
3.4 Interdisciplinary Module	MMBI 3603	Management and marketing in biotechnological industry			2	3.32	1/1/0	6
	PP 3604	Psychology and Pedagogy			2	3.32	1/1/0	6
4. Practice	PT 303	Practice Training			1	1.66		6
Semester 7								
3.3 Modules forIndividual EducationalTrajectories **(IET)**								
IET 1: «Biotechnology of micro-organisms»	IET 2: «Cell and molecular biotechnology»	IET 3: "Food biotechnology"	IET 4: "Genetics technology"	IET 5: "Biotechnology of Environment"				
P 4507 Probiotics 2/0/1	TPCMPP 4507 Technology of Plant clonal micropropag a-tion and plant preser-vation 2/0/1	MFP 4507 Micro-organisms of fermentative productions 2/0/1	CHA 4507 Cytogenetics of Human and Animal 2/0/1	SM 4507 Soil Microbiology 2/0/1	3	4.98		7
ICM 4508 Immobilized cells of micro-organisms 2/0/1	BPB 4508 Bioinformati o-nal poly-mers in biotechnolo-gy **2/1/0**	PMP 4508 Production of microbial proteins 2/0/1	BF 4508 Basics of Phytopatho-logy 2/1/0	TRDS 4508 Technology of regenera-tion of degradational soil 2/1/0	3	4.98		7

BFM 4509 Biotechnology of phototrofic micro-organisms 2/0/1	BB 4509 Basics of Bioinformati on 2/0/1	BNSMP 4509 Biotechno-logy of national fermented milk prod-ucts 2/0/1	BFG 4509 Basics of pharmaco-logy genetics 2/0/1	FE 4509 Phytoremeda tion of Envi-ronment 2/0/1	3	4.98		7
GSM 4510 Genetics and selection of micro-organisms 2/1/0	BB 4510 Basics of Bionanotech-nology 2/1/0	MSRMF 4510 Microbiolo-gical safety of raw mate-rials of food-stuff 2/1/0	SCB 4510 Stem cells biotechno-logy 2/1/0	EB 4510 Ecologycal biochemistry 2/1/0	3	EC		7
MRC 4511 "Microorganisms Recognition and its Cultivation" practice expeariens 1/0/2	PECMB 4511 Practical experience in cell and molecular biotechnolo-gy 1/0/2	MCFPPE 4511 "Microbio-logical con-trol of Food productions" practical experience 1/0/2	MGPE 4511 "Molecular genetics" practice experience 1/0/2	MPOWPE 4511 "Microbiolog-ical pro-cessing of organic waste" prac-tice experi-ence 1/0/2	3	4.98		7
3.4 InterdisciplinaryMo dule	IEB 4601	Innovative Entrepreneurship(trade-wise) in Biotechnology			2	3.32	1/1/0	7
	IPL 4602	Intellectual Property Law			2	3.32	1/1/0	7
Semester 8								
4. Practice	PT 404	Practice Training			4	6.64		8
	PP 405	Pedagogical Practice			3 3 weeks	4.98		8
5. Final Certification		Preparation and Presentation of Bachelor's Dissertation (Diploma Project)			2	3.32		

For the Master's degree programme "Biotechnology" the self-assessment report states the following **intended learning outcomes**:

1. Knowledge

1. Know theoretical basics of the solid backgrounds in biotechnological science, chemistry, botany, zoology, genetics, microbiology, molecular biology and etc;
2. Knowledge about the main concepts, techniques and prospects of the develop-ment of Biotechnology;
3. Knowledge about applying the manufacturing and quality standards required by the biotechnology industry;

4. Know biological processes, occurring in vivo or in vitro conditions, their interrelationships and interdependencies; biodiversity of animal and plant organisms, the basic principles of environmental protection and management;

2. Understanding

1. Understand the understand and apply the manufacturing and quality standards;
2. Understand the classification peculiarities of morphology, physiology and reproduction; principles of systemic structuring, differentiation and integration of organisms;
3. Understand the academically and socially basics for employment in the biotechnology field;
4. Understand general scientific methodology of the biological and technical science;

3. Application

1. Apply critical and practical thinking, problem solving, communication, interpersonal, and computer skills related to biotechnological science.
2. Apply the received practical skills and theoretical knowledge in their scientific research and in industry. Choose forms, methods and means of collecting information
3. Apply the modern information technology in Biotechnology and Bioinformatics, using modern computer methods for information collection, storage and use;
4. Solve situational problems on practical materials laboratories

4. Analysis

1. Analyze, organize, time manage, critical thinking, problem solving the results of field and experimental studies
2. Apply methods of creating and using models to describe and forecast different processes and phenomena, at the same time carrying out their qualitative and quantitative analysis and synthesis
3. Analyze the information retrieval and methodical problems in various fields of biotechnology
4. Analyze and conduct scientific studies; use the knowledge of higher education psychology and pedagogy in practical activities;

5. The synthesis

1. Develop systematic renovation of knowledge during professional activities and plan for control and monitoring of production
2. To organize conferences, special courses and seminars on issues of BiotechIndustry and biotechnological lab
3. Propose possible scientific methods of learning to achieve goals
4. Create a strategy for the analysis of work processes and phenomena in the modern BiotechIndustry.

6. Evaluation

1. Evaluate the modern system of organizing and financing scientific research
2. Protect the received digital data , applied methods and techniques
3. Choose costing methods that are acceptable to the specific industry
4. Be able to evaluate in all aspects of modern biological and technical knowledge

The following **curriculum** the Master's degree programme "Biotechnology" is presented:

Title ofmodules	Course code	**Title of courses**	Credit	**Unit/ ECTS**	**Lec/ prac/ Lab**	**Sem**
Semester 1						
1. Regulation of biological process	RG 5301	Regulation of Genome	3	4.98	2/1/0	1
	VS 5302	Cell Signalization	2	3.32	1/1/0	1
2. Physiology and touch systems microorganisms	FYM 5301	Physiology of Stability of Microorganism	3	4.98	2/1/0	1
	SSFM 5302	Touch Systems of Phototrophic Microorganisms	2	3.32	1/1/0	1
3. Actual Issues of Genome Regulation and Analysis	APEG 5301	Current Issues of Gene Expression	3	4.98	2/1/0	1
	MAG 5302	Methods of Genome Analysis	2	3.32	1/1/0	1
4. International standards and innovative technologies	MSPB 5301	International standards in food biotechnology	3	4.98	2/1/0	1
	ITPP 5302	The innovative technology of food production	2	3.32	1/1/0	1
5. Biotechnology and control of aquatic ecosystems	KZVE 5301	Control of contaminated aquatic ecosystems	3	4.98	2/1/0	1
	BOSV 5302	Biotechnology wastewater treatment	2	3.32	1/1/0	1
Semester 2						
Title ofmodules	Course code	**Title of courses**	Credit	**Unit/ ects**	**Lec/ prac/ Lab**	**Sem**
Biomedical technology	SK 5303	Stem Cells	3	4.98	2/1/0	2
	BN 5304	Biomedical Nanotechnologies	2	3.32	1/1/0	2
Medical aspects of biotechnology	MAVMM 5303	Microecological Aspects of Relationships Between Macro-and Microorganisms	3	4.98	2/1/0	2
	BPDTPIB	Approaches to Diagnos-	2	3.32	1/1/0	2

	5304	tics, Therapy and Preventive Maintenance of Infectious Diseases				
Genetics Basis of Plant Selection and Phytopathology	GASR 5303	Genetic Aspects of Plant Selection	3	4.98	2/1/0	2
	GOF 5304	Genetical Basics of Phytopathology	2	3.32	1/1/0	2
New foods	PPLPN 5303	Production of therapeutic and prophylactic purposes	3	4.98	2/1/0	2
	RNPP 5304	The development of new food products	2	3.32	1/1/0	2
Increasing the productivity of agricultural lands and microbial technology	BPPA 5303	Biotechnology increasing the productivity of agricultural lands	3	4.98	2/1/0	2
	MTZBE 5304	Microbial technology to protect and restore ecosystems	2	3.32	1/1/0	2
Semester 3						
Title ofmodules	Course code	**Title of courses**	Credit	**Unit/ ECTS**	**Lec/ prac/ Lab**	**Sem**
Proteomic technologies	BI 6305	Protein Engineering	3	4.98	2/1/0	3
	P 6306	Proteomics	2	3.32	1/1/0	3
Recycling of industrial waste	BPPBO 6305	Biotechnological Processing of Industrial and Household Waste engineering	3	4.98	2/1/0	3
	BCZOS 6306	Cyanobacterial biotechnology and environmental protection	2	3.32	1/1/0	3
Modern Issues of Mutagenesis and Apoptosis	STM 6305	Modern Theories of mutation	3	4.98	2/1/0	3
	OPA 6306	Common Problems of Apoptosis	2	3.32	1/1/0	3
Food diag-	PDKK	Food Diagnostics: quali-	3	4.98	2/1/0	3

nostics and biologically active substances	6305	ty control				
	BPBAV 6306	Biotechnology production of biologically active substances	2	3.32	1/1/0	3
The metabolism of xenobiotics and environmental problems	MK 6305	The metabolism of xenobiotics	3	4.98	2/1/0	3
	BPREP 6306	Biotechnological processes in dealing with environmental problems	2	3.32	1/1/0	3
Semester 4						
Title ofmodules	Course code	**Title of courses**	Credit	**Unit/ ECTS**	**Lec/ prac/ Lab**	**Sem.**
Fundamentals of Molecular Technology	G 6307	Genomics	3	4.98	2/1/0	4
	MB 6308	Molecular Biotechnology	2	3.32	1/1/0	4
Microbial products	MPPVE 6307	Microbial preparations and products restoration of ecosystem	3	4.98	2/1/0	4
	TMS 6308	Technology microbial synthesis	2	3.32	1/1/0	4
Genetics of Heredity Diseases	MMNB 6307	Molecular mechanisms of hereditary diseases	3	4.98	2/1/0	4
	MGDNB 65308	Molecular genetic diagnosis of heredity pathology	2	3.32	1/1/0	4
Combination products and processing	BKMP 6307	Biotechnology combined dairy products	3	4.98	2/1/0	4
	PPSRZMP 6308	Principles of processing raw materials of plant, animal, microbial	2	3.32	1/1/0	4
Methods for environmental analysis and photo-	IMASOS 6307	Instrumental methods of analysis comp oyaniya environment	3	4.98	2/1/0	4

trophic microorganisms						
	FME 6308	Phototrophic microorganisms in environmental biotechnology	2	3.32	1/1/0	4

For the Bachelor's degree programme "Fish industry and industrial fishery" the self-assessment report states the following **intended learning outcomes**:

- *Knowledge*
  - Essential principles of organization of the biological systems, organisms' metabolism, heredity and evolution;
  - Diversity, biology and ecology of fishes worldwide and in the Republic of Kazakhstan
  - Labor and ecological legislation of the Republic of Kazakhstan, international compacts in wild-life conservation.

- *Understanding*
  - Organization of water ecosystems and multiple interactions between living organisms
  - Hydrocoles reactions and adaptations to water pollution
  - Biological ant technical background of pisciculture
  - Principles of industrial and individual fish farming

- *Apply*
  - Field and experimental biological methods in aquatic researches
  - Normative documents and sanitary code in the assessment of artificial and nature aquatic systems;
  - Skills in fish feeding and breeding, bioproductivity estimate, parasitologic analysis

- *Analyze*
  - Field and experimental data statistically and perform data according to standard;
  - References and findings for drawing conclusions and performing system analysis;

- *Evaluate*
  - The bioproductivity of water reservoirs, state of fish population
  - The ecological state of water reservoirs and pollution degree

- *Create*
  - Scientific reports and other standard documentation
  - Scientific papers, materials, patents
  - Health, wild-life conservation and environment preservation activities.

The following **curriculum** for the Bachelor's degree programme "Fish industry and industrial fishery" is presented:

Title of modules	Course code	Title of courses	Credit	ECTS	Lec/ prac/ Lab.	Sem.
1. State compulsory module (10 credits)	HRK1101	History of Kazakhstan	3	5	2+1+0	1
	K(R)LPP1102	Professionally-Oriented Kazakh (Russian) Language	3	5	0+3+0	1
	FLPP1103	Professionally-Oriented Foreign Language	3	5	0+2+1	1
	PSK1104	Philosophy of Scientific Knowledge	2	3	1+1+0	4
2. Social-communicative module (4 credits)	PIC2201	Psychology of Interpersonal Communication	2	3	1+1+0	3
	TAPS2202	Theoretical and Applied Political Science	2	3	1+1+0	3
	EPSS2203	Ethics of Personal and Social Success	2	3	1+1+0	3
	CR2204	Culture and Religion	2	3	1+1+0	1
	GAS2205	General and Applied Sociology	2	3	1+1+0	3
	HLS2206	Human Life Safety	2	3	1+1+0	3
	ESD2207	Ecology and Sustainable Development	2	3	1+1+0	3
	KL2208	Kazakhstan Law	2	3	1+1+0	3
	FE2209	Fundamentals of Economics	2	3	1+1+0	3
3. Vocational Modules (115 credits)	**3.1 Natural Sciences (STEM) module**		**12**	20		
	ITPP3301	Information Technologies for Professional Purposes	3	5	1+0+2	5
	Bio2302	Biophysics	3	5	1+0+2	3
	Mat1403	Mathematics	3	5	1+2+0	1
	L1401	Latin	3	5	0+2+1	1
	3.2. Basic professional module		**69**	115		
		Module 1 Physics				
	Phy1404	Physics	3	5	2+0+1	2
		Module 2 Zoology				
	IZ1402	Invertebrate zoology	3	5	2+0+1	1
	VZ1403	Vertebrate zoology	3	5	2+0+1	2
		Module 3 Ecology				
	Eco1404	Ecology	3	5	1+2+0	2
		Module 4 Gydrobotanyc and hydrochemistry				
	Gyd1405	Gydrobotanyc	3	5	2+0+1	2
	Hyd1306	Hydrochemistry	3	5	1+0+2	2
		Module 5 *Fundamentals foundation of histology and cytology*				
	FFHC2407	Fundamentals foundation of histology and cytology	3	5	2+0+1	3
		Module 6 *Fundamentals* foundations of microbiology and virology				
	FFMV2408	Fundamentals foundations of	3	5	2+0+1	3

		microbiology and virology					
		Module 7 Hydrobiology					
	GH2409	General hydrobiology		3	5	2+0+1	3
	PH2410	Particular hydrobiology		3	5	2+0+1	4
		Module 8 Ichthyology					
	GI2411	General ichthyology		3	5	2+0+1	3
	PI2412	Particular ichthyology		3	5	2+0+1	4
		Module 9 Embryology of fishes					
	EF2413	Embryology of fishes		3	5	2+0+1	4
		Module 10 Ichtyopatology					
	Ich2414	Ichtyopatology		3	5	2+0+1	4
		Module 11 Genetics					
	GMG3415	General and molecular genetics		3	5	2+0+1	5
	GBFHA3416	Genetics, breeding and fish husbandry in aquaculture		3	5	2+0+1	6
		Module 12 Biochemistry					
	Bio3417	Biochemistry		3	5	2+0+1	5
		Module 13 Fundamentals of industrial fishery					
	FIF2418	Fundamentals of industrial fishery		3	5	1+1+1	4
		Module 14 Ichthyotrophology and Feeding of fishes					
	Ich3420	Ichthyotrophology		3	5	2+0+1	6
	FOA4421	Feeding of fishes		3	5	2+0+1	7
		Module 15 Physiology of fish with fundamentals of toxicology					
	PFWFT3422	Physiology of fish with fundamentals of toxicology		3	5	2+0+1	6
		Module 16 Aquaculture					
	Agu3423	Aquaculture		3	5	1+1+1	5
		Module 17 Fish stocks theory					
	FST3424	Fish stocks theory		2	3	1+0+1	6
	3.3 Modules of individual educational trajectory (IET)			**30**	50		
		IET 1. Aquaculture	**IET 2. Hydrobiology and Ichthyology**	**30**			
		SW3501 Scientific writing (kaz/rus/eng) 0/1/0	SW3501 Scientific writing (kaz/rus/eng) 0/1/0	1	2		5
		MF3502 Management of fisheries (1+2+0)	HMIR3502 Hydrobiological methods and ichthyological research (1+1+1)	3	5		5
		BAICWSU3503 Breeding of aquacul-	GH3503 Genosystem	3	5		6

		ture in cuit (circular) of water supply units (closed) (1+2+0)	atics of hydrobionts (2+1+0)				
		CLF3504 Cultivation of live feeds (2+0+1)	MWB3504 Monitoring of water bod-ies(1+2+0)	3	5		6
		OSHFF3505 Occupa-tional safety and health in fish farm-ing (1+2+0)	BEF3505 Biology and ecology of fishes (1+2+0)	3	5		6
		MFR4506 Methods of fisheries research (1+1+1)	TBWB4506 Bioproductiv ity of water bod-ies(1+2+0)	3	5		7
		FM4507 Fundamentals of mariculture (1+2+0)	Ich4507 Ichthyogeog raphy (2+1+0)	3	5		7
		HEF4508 Hydraulic engineering in fish-eries (1+2+0)	TBF4508 The behavior of fish(1+2+0)	3	5		7
		DF4509 Diseases of fishes (1+1+1)	SH4509 Sanitary hydrobiolog y (1+1+1)	3	5		7
		OFB4510 Ornamen-tal fish breeding (1+0+1)	Lim4510 Limnology(1 +1+0)	2	3		7
		MF4511 Morpholo-gy of fishes (1+1+1)	AH45011 Acclimatizati on of hydrobionts (1+2+0)	3	5		7
	3.4 Interdisciplinary module			4			
	IE3601	Innovative Entrepreneurship (trade-wise)		2	3	1+1+0	5
	IL3602	Intellectual law		2	3	1+1+0	5
	FB3603	Fishery biometrics		2	3	1+1+0	5
	BSA3604	Bases of the statistical analysis		2	3	1+1+0	5
	4.1	Professional practice (by types of practice)		**17**			
4. Prac-tice	EP101	Educational practice (field, zoology) (3 weeks)		6		2	
	EP202	Educational practice (field, hydrobiology, ichthiology) (3 weeks)		6		4	
	PP303	Practical training		1		6	

	PP404	Practical training	4		8	
5. Final Certification	**5.1**	Preparation and Presentation of Bachelor's Dissertation (Diploma Project)	**2**	3		8
6. Additional forms of training	**PhT**	Physical training	**8**	13	0+0+2	1,2, 3,4
TOTAL :			**157**			

For the Master's degree programme "Fish industry and industrial fishery" the self-assessment report states the following **intended learning outcomes**:

- *Knowledge*

- The diversity of the organic world , the specific features of the animal organism, the basic laws and stages of evolution, the laws governing the functioning of biological systems;
- The place and role of aquatic ecosystems in the various bodies of water, biology, distribution, and detailed classification of fish;
- The value of aquatic organisms to human activities, the laws of the Republic of Kazakhstan for the protection of wildlife;
- Methods of field and laboratory ichthyology and hydro-biological research;
- The basic laws governing the functioning of aquatic ecosystems;
- The basis of the economic and legal activities in the waters;
- Biology and characteristics of the main objects of fishing and fishery, their ecology;
- Methods for assessing fish stocks, bonitation reservoirs;
- Fisheries research methods, terms and conditions of their implementation;
- The value of aquatic resources for human rights;
- The current status of aquaculture and its future development;
- The basis of artificial reproduction and commercial breeding of aquatic organisms;
- Design basis hatchery spawning and nursery farms, fish farms growing commercial fish;
- Waterworks hatcheries, their technical service, technical justification fisheries development;
- Advances in science and technology, the advanced domestic and foreign experience in the relevant work performed, area of expertise;
- The basis of economy, labor and production;
- The basis of labor law;
- The rules and regulations of labor;
- Technical and biological basis of pond , warm water and industrial farms

be able to:

- Apply their knowledge to solve specific scientific, practical, information retrieval and teaching, educational objectives;
- To use modern methods of studying natural phenomena and processes to determine the practical significance commercial fish populations;
- To organize and carry out commercial fishing, reclamation works to rescue the young, conservation breeding grounds, artificial fish farming;
- Manage the activities of fish farms to determine the species composition of aquatic reservoirs of Kazakhstan;

have the skills to :

- ichthyology and hydrobiological field trials, treatment with fishing gear and fish hatchery stock;
- be competent : In the organization and management of fisheries; In the legislative and legal acts of the fishery.

The following **curriculum** for the Master's degree programme "Fish industry and industrial fishery" is presented:

Title of modules	Course code	Title of courses	Credit	Unit/ (ECTS)	Lec/prac /Lab.	Sem.
I. Taught Component						
1. Compulsory State module (8 credits/12 ECTS)	IFN 5201	History and Philosophy of Science	2	3/90	1+1+0	1
	Iya(p)5202	Professionally-Oriented Kazakh (Russian) Language	2	3/90	0+2+0	1
	Ped 5203	Pedagogics	2	3/90	1+1+1	2
	Psy 5204	Psychology	2	3/90	1+1+0	2
2. Compulsory Professional Module (14 credits/21 ECTS)	BPVUIGVR 5205	Biological productivity of reservoirs and sustainable use of genofonds of water resources	2	3/90	1+1+0	1
	OPNI 5306	Organization and Planning of Scientific Research	3	4.5/135	2+1+0	1
	PRIWB 5207	Issues of Rational Exploitation of Water Biological Resources of Kazakhstan	3	4.5/135	2+1+0	1
	BRCh 5208	Biotechnology in Fish Industry	3	4.5/135	1+2+0	3
	TPR 5209	Theory and Practice of Fishing	3	4.5/135	1+2+0	3
Modules of individual	**3. Modules of individual educational Trajectory**		**20**	30/900		
	IET 1. Biological bases of Fish	**IET 2. Scientific bases of commer-**	**20**	30/900		

educational Trajectory (20 credits/30 ECTS)	**industry**	**cial industry**				
	MIOT 1 Problems Conservancy of Bioresourse of Water Ecosystem	**MIOT 1 Problems Conservancy and Methods Peelings of Water Ecosystem**	**5**	7.5/225		
	ORR 5201 Protection of Fish Resources	AWW 5201 Antropogenic Pressure on Reservoires	2	3/90	1+1+0	1
	EEW 5202 Ecological Expertise of Reservoires	BMOW 5202 Biological Methods of Water Refining	3	4.5/135	2+1+0	
	MIOT 2 Grow of Hydrobionts Biotechnology	**MIOT 2 Hybridization and Breeding Object of Acqaculture**	**5**	**7.5/225**		
	ZRH 5207 Integrated methods of fish-farming	BOO 5207 Biologycal Basis Foundation of Sturgeon-farming	2	3/90	1+1+0	2
	FR 5208 Patterns of Hydrobiontes' Development	PGOA 5208Issues of Hybridisation of Objects of Acuaculture	3	4.5/135	2+1+0	
	MIOT 3 Ecological structure and functional regularities of water systems	**MIOT 3 Issues of applied fish farming and fishing industry**	**5**	**7.5/225**		
	ESVP 6211 Ecological structure of species and populations	BPEW 6211 Biological Productivity of Natural Reservoires	2	3/90	1+1+0	3
	ZFVE 6212 Functional regularities of water ecosystems	NBNI 6212 Normative Base of Scientific Researches	3	4.55/135	2+1+0	
	MIOT 4 Taxonomical revisions and comparative morphology of fishes	**MIOT 4 Problems of Biological Production and Fisheries on Interior Reservoir**	**5**	**7.5/225**		
	MTRR 6215 Methods of taxonomical revisions of fishes	UP 6215 Population' Doctrine	2	3/90	1+1+0	

	SMR 6216 Comparative morphology of fishes with paleoichthyology	BPIW 6216 Biological Productivity of Artificial Reservoires	3	4.5/135	1+2+0	3
II. Additional Types of Training						
Addition-al Types of Train-ing (13 cred-its/19.5 ECTS)	Master's Reseach Work and Fullfilment of Dissertation	Research Seminar I	1	1.5/15		1
		Research Seminar II	1	1.5/15		2
		Research Seminar III	1	1.5/15		3
		Research Seminar IV	4	6/60		4
	Professional Practice	Pedagogical Practice	3	4.5/135		3
		Research practice	3 (1+2)	4.5/135		1, 4
Final Attestation						
Final Attestation 4 credits		**Complex Examina-tion**	**1**	1.5/15		4
		Dissertation Fullfilment and Defence	**3**	4.5/135		4
Grand Total:			**59 credits (88,5 ECTS)**			

For the Master's degree programme "Geobotany", the self-assessment report states the following **intended learning outcomes**:

1. Knowledge

1. base of fundamental sciences within the geobotany specialization;
2. nature, mechanisms and patterns of the vital processes of living organisms (microorganisms, plants and animals);
3. main achievements and development trends of modern Geobotany;
4. design and operation of modern laboratory and production equipment;
5. technology of professional and scientific activities of geobotanist;
6. the main provisions of the professional and scientific ethics and to use them in the workplace;
7. abide by the rules of labor protection and safety regulations and to demand it from others;
8. at least one foreign language at the level of proficiency in the specialty;
9. basics of pedagogy and psychology, management and motivation of the scientific activity of the collective;
10. fundamental knowledge on the intersection of science, providing professional mobility in a changing world;
11. acquire the necessary knowledge in the field of university pedagogy and psychology,
12. purchase of teaching experience at the university.

2. Understanding

1. state of development of geo-botanical science in the world, and Kazakhstan;
2. the development of geo-botanical scientific schools of Kazakhstan;
3. The role of science and innovation in the world;
4. the basic laws of the market economy and management, objectives, principles and mechanisms of innovative development of Kazakhstan's economy;
5. modern methodology of pedagogy of higher education;
6. achievement of psychological science;
7. aware of their social, economic, professional role;
8. modern methods and technologies that are applicable to the geo-botanical studies and modern scientific research.

Results of training programs

3. Application

1. to design and implement professional, scientific and scientific-pedagogical activity, and the activity of the collective;
2. predict the results of the professional and scientific activities;
3. control and objectively evaluate the results of the professional and scientific activities;
4. to accept responsibility for professional and scientific solutions;
5. conduct joint research activities;
6. design to further the professional development;
7. confront the personal and professional deformation;
8. own ways of self-realization, self-organization and self-rehabilitation;
9. own modern information technologies, including methods of obtaining, processing and storage of scientific information,
10. carry out the necessary measures for environmental management;
11. use modern methods of study and restoration of natural ecosystems;
12. work in the field, use the teaching and laboratory equipment and modern educational technology;
13. perform important scientific projects that require in-depth practical and theoretical techniques that provide original result.

4. Analysis

1. solution of standard scientific and professional problems;
2. correct and logical design of their thoughts orally and in writing;
3. expansion of knowledge, based on information and educational technologies;
4. search for information and creative solutions;
5. actualization of personal and professional experience activities;
6. conducting geobotanical studies on the theoretical, methodological and empirical levels;
7. implementation of measures for the rational use of natural resources;
8. find the original application of existing knowledge, along with a practical understanding of how existing methods of research and analysis used in geobotany to cre-

ate and interpret new knowledge;
9. demonstrate independence and original approach to solving problems,
10. to plan and solve problems at a professional level;
11. develop and deepen their knowledge and acquire new skills at high professional level;
12. have the personal qualities and skills needed for successful employment and requiring initiative and personal responsibility,
13. solve problems in a complex and unpredictable situations,
14. develop the capacity for self-directed learning for continuing professional development.

5. Synthesis

1. organize your time to build a learning strategy, decision making and problem solving.
2. act rationally and independently, in accordance with its science-based conclusions, observations and experience obtained as a result of the passage of teaching and field practice of using herbarium material.
3. make full of morphological and anatomical characteristics of pre-existing and modern plants of different taxonomic groups that define their position in the organic world
4. demonstrate a systematic and creative approach to solving complex problems
5. to be able to make informed judgments in the absence of complete data and effectively present their conclusions both for professionals and for audiences who do not have adequate training;

6. Evaluation

1. acquire current knowledge in the field of botany, practical skills in research,
2. formulate and use the laws of of fundamental sciences in addressing current scientific and practical problems
3. to plan and conduct activities in selected scientific specialty,
4. predict the standard environmental situation
5. critically evaluate the problems, approaches and trends, which reflect the current state of scientific disciplines, the field of geo-botanical studies and area of professional practice;
6. critically evaluate the current state of geo-botanical research and theory in the field of scientific knowledge;
7. evaluate methodological approaches to implement their critical analysis and if necessary, propose new hypotheses;
8. Develop creative individual abilities.

The following **curriculum** for the Master's degree programme "Geobotany" is presented:

Title of modules	Course code	Title of courses	CP	Cycle	Lec/ prac/ Lab.	Sem.
		I. Taught Component				
		Compulsory State Module 1				
1. State Compulsory Module (8 credit)	IFN 5201	History and Philosophy of Science	2	CC	1+1+0	1
	Iya(p)5 202	Foreign language (Professional)	2	CC	1+1+0	1
		Compulsory State Module 2				
	Ped 5203	Pedagogics	2	CC	1+1+0	2
	Psy 5204	Psychology	2	CC	1+1+0	2
		Elective Modules of Professional Specialization				
2. Elective modules of professional specializati 01 (14 credits)	**Module name**	**Compulsory Professional Module 1**				
	SBRRIR P 5205	Conservation of biological diversity and sustainable use of plant cover	2	CC	*1+1+0*	1
	Module name	**Compulsory Professional Module 2**				
	OPNI 5206	Organization and Planning of Scientific Research	3	CC	*2+1+0*	1
	Module name	**Compulsory Professional Module 3**				
	PhC 5207	Phytotsenology	3	CC	*2+1+0*	1
	Module name	**Compulsory Professional Module 4**				
	PR 5208	Useful plants	3	CC	*2+1+0*	1
	Module name	**Compulsory Professional Module 5**				
	IG 5209	Indicator geobotany	3	CC	*2+1+0*	2
1 Mod-Modules of Indi-		**Modules of Individual Educational Paths 1**				
	6M061300- Research of phytocenoses					
	Module name	**Special geobotany MIOT 1**				

vidual Educational Paths 01 (IEP1) 20 credits	RP 5301	The vegetation of The Deserts	3	ED	1+2+0	2
	RGT 5302	Mountain Areas Vegetation	3	ED	1+2+0	2
	RS 5203	The vegetation of the steppes	3	ED	1+2+0	2
	Module name	**Regional geobotany MIOT 2**				
	RLPR 6204	The vegetation of meadows and floodplain	3	ED	1+2+0	3
	RL 6205	Forest vegetation	3	ED	1+2+0	3
	Module name	**Research of cenopopulations MIOT 3**				
	CR 6206	Plant cenopopulation	3	ED	1+2+0	3
	MISVCPh 6207	Research methods of structure and relationship of cenopopulations in phytocenoses	2	ED	1+1+0	3
2 Modules of Individual Educational Paths 02 (IEP1) 20 credits	**Modules of Individual Educational Paths 2**					
	6M061300- Geobotanical research					
	Module name	**Local flora MIOT 1**				
	GR 5301	Geography of plants	3	ED	1+2+0	2
	LP 5302	Landscape design	3	ED	1+2+0	2
	MOS 6204	Environment monitoring	3	ED	1+2+0	2
	Module name	**Modern research methods in geobotany MIOT 2**				
	GMI 6204	GDS technology in geobotany	3	ED	1+2+0	3
	K 5203	Mapping	3	ED	1+2+0	3
	Module name	**Geobotanical MIOT 3**				

	GMI 6206	Geobotanical Research Methods	3	ED	1+2+0	3
	DZ 6207	Remote sensing	2	ED	1+1+0	3
3 Modules of Individual Educational Paths 03 (IEP1) **20 credits**	**Modules of Individual Educational Paths 3**					
	6M061300- Protection of plants					
	Module name	**Archegonial plants MIOT 1**				
	SAVR 5301	Comparative anatomy of the highest plants	3	ED	1+2+0	2
	AR 6206	Archegonial plants	3	ED	1+2+0	2
	YR 5203	Poisonous plants	3	ED	1+2+0	2
	Module name	**Regional flora and its protection MIOT 2**				
	Br 6204	Bryology	3	ED	1+2+0	3
	ORIVR 6205	Protection of rare and endangered species of plants	3	ED	1+2+0	3
	Module name	**Rizology and phytodesign bases MIOT 3**				
	EOOSG 5302	Ecological bases of gardening of villages and cities	3	ED	1+2+0	3
	EPOR 6207	Ecomorphology of underground organs of plants	2	ED	1+1+0	3
	I. Additional Types of Training 13 credits (19.5 ECTS)					
Additional Types of Training 13	NIRM	Master's Reseach Work and Fullfilment of Dissertation	7	CC		1, 2, 3, 4
	PP	Professional Practice	6	CC		1, 4

credits						
	II. Final Attestation 4 credits					
Final Attes-tation 4 cred-its	CE	Complex examination	1	CC		4
	ZD	Dissertation Fullfilment and Defence	3	CC		4
GRAND TOTAL			**59 credits (88,5 ECTS)**			

C Peer Report for the ASIIN Seal

1. Formal Specifications

Criterion 1 Formal Specifications

Evidence:

- Self-assessment reports of the university
- Student's guide (not presented to the peers)
- University website: http://www.kaznu.kz/en/13747/page

Preliminary assessment and analysis of the peers:

The formal specifications stated in the self-assessment reports (SAR) of the university provide the necessary information on duration of the programme, the curricular structure including the possible choice of individual study paths as well as expected workload (workload is treated in the chapter 3.2 separately). The titles of the degree programmes correspond to the disciplines and contents taught. For all programmes under review, the decreased number of student intakes in the years 2011-2013 is due to a low birth rate in Kasachstan after fall of the Soviet Union. The programmes usually start annually, in the fall semester. The tuition fees indicated in the SAR reflect the exchange rate as of February 2014.

The panel has however not found any detailed information on the website of the university. A brief description of the programme learning outcomes, duration of the programmes, possible study paths as well as possibilities of internships and job placements would be very helpful for graduates of secondary schools choosing an university; not least would it be beneficial for attracting students who made a conscious decision to study the respective programme at al-Farabi Kazakh National University. Also foreign students who apparently show major interest towards the programmes of Commercial Fishery and Geobotany need to inform themselves about programmes before submitting the application. It is therefore recommended to enrich the information about each of the study programmes available at the website in order to increase transparency and visibility for stakeholders.

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

The university reacted very soon the recommendation of the panel and presented information on the programme learning outcomes, duration of the Biotechnology programmes, possible study paths as well as possibilities of internships and job placements on the university's website. The university provided a screenshot and a link (leading to an error) to the website, and since the university showed the willingness to implement this change, the panel acknowledges the recommendation for Biotechnology as fulfilled. For other programmes, the assessment of the panel remains as described above.

2. Degree programme: Concept & Implementation

Criterion 2.1 Objectives of the degree programme

Evidence:

- Self-assessment reports of the university (cf. part 2.1)

Preliminary assessment and analysis of the peers:

The contents and the design of the programmes presented reflect the envisaged strategy of the University which strives for the award of the status of a Research university, but is at the same time aiming at providing an application-oriented higher education. The programme objectives, presented in chapter 2.1 of the self-assessment reports, are clearly separated into the fields of education, research and social life and generally reflect the qualification levels according to the requirements of the European Qualifications Frameworks for Life-Long Learning (EQF – LLL) on the level 6 for Bachelor's and respectively 7 for Master's programmes as well as to the requirements defined in the Dublin descriptors. As an example, a valid and up-to-date programme objective of the Bachelor's programme Commercial Fishery can be quoted: "Study of the species composition of aquatic organisms, the biology, distribution and classification of aquatic organisms, determining productivity of reservoirs sources and routes of infection of fish, the calculation of the permissible norms catch of aquatic organisms, stocking ponds, holding of Production Research and sanitary assessment of water bodies". For research-related programme objectives, the case of the degree programme Geobotany provides several valid statements on the aims ("Ability to integrate knowledge from geobotanic system of education and research in the area of the broad scope of professional work in a constantly changing world"). In contrary as for Biotechnology, the overall programme objectives appear to be formulated in a rather generic way and could be applied to almost any field of studies. For instance, as an educational aim, the SAR states "Incorporate theories, principles, techniques, and applications of research within all components of the curriculum", which could be applied to any field of studies and is rather input-than output-oriented. The

same is true for the objectives stated for the Biotechnology programmes in the parts titled “Research”, requiring the graduates to “conduct and direct research, scholarship, and other professional research activities.” It is therefore recommended to describe the programme objectives of the Bachelor’s and Master’s programmes Biotechnology in a more subject-specific and output-oriented way. As the peers see a rather elaborated set of intended learning outcomes for the programmes in Biotechnology (see below), it should not be difficult for the university to give more concrete information of the overall objectives of these programmes to whomever interested stakeholders.

Nevertheless, the content-wise compatibility with the Qualifications Framework of the European Higher Education Area can be herewith confirmed in general for all programmes under review. The peers deemed that the qualification envisaged by each of the programmes corresponds to the requirements of an international labour market as well as to the expected developments in the respective science fields.

Criterion 2.2 Learning Outcomes of the Programme

Evidence:

- Self-assessment reports of the university
- Discussions with representatives of the university (programme coordinators, teaching staff)

Preliminary assessment and analysis of the peers:
In the view of the peers, the intended learning outcomes listed for each of the programmes correspond to the expected level of knowledge, skills and competences and reflect the requirements defined in the respective subject-specific criteria of the Technical committees of ASIIN.

They appreciate that the learning outcomes are described in a detailed way and that most of the definitions are following the competence-oriented approach (stating the spheres for application, issues for analysis, possibilities of synthesis etc.).

As for the Bachelor’s programme Fish industry and Industrial Fishery, the overall learning outcomes show full compliance with the subject-specific criteria defined by the Technical Committee 08 – Agronomy, Nutritional Science and Landscape Architecture as far as level and content of expected knowledge, skills and competencies are concerned. For instance, in the field of expected knowledge and understanding, the subject-specific criteria (subject-specific criteria) require that graduates “are aware of the further multidisciplinary context of agronomy, nutrition science, or landscape and neighbouring fields”, which is reflected in the following learning outcomes of the programmes: “Essential principles of

organization of the biological systems, organisms' metabolism, heredity and evolution" as well as "Labor and ecological legislation of the Republic of Kazakhstan, international compacts in wild-life conservation", the latter one corresponding to the neighboring fields and multidisciplinary aspects. Although the learning outcomes of the programme do reflect the requirements of the ASIIN subject-specific criteria and describe the progarmme contents already quite well, the panel encourages the programme coordinators to include a more concrete description of different skills and research aspects needed for fish industry and industrial fishing.

Further on, in the field of Engineering Analysis, the subject-specific criteria require the graduate to be "able to apply different methods orientated on fundamentals – such as mathematical, statistical, and experimental (laboratory) analysis" and "qualified to plan and conduct respectively suitable experiments, interpret the data, and draw conclusions", whereas the SAR states the ability to analyse "Field and experimental data statistically and perform data according to standard" as well as "references and findings for drawing conclusions and performing system analysis".

Last but not least, also in the field of social competencies, the subject-specific criteria require the graduates "depending on the professional field they have competences in the fields of management and marketing, in particular project management, acquisition, personnel management, controlling etc.", which is partly reflected in the statement "Labor and ecological legislation of the Republic of Kazakhstan, international compacts in wild-life conservation" as well as in the requirement to know the relevant "normative documents and sanitary code in the assessment of artificial and nature aquatic systems".

The same is true for the Master's programme Fish industry and Industrial Fishery. In the fields of Engineering analysis, the subject-specific criteria require the graduates to be able "to recognise the relevance of the ecologic and economic framework conditions relating to social, health and safety issues", which is comparable with the learning outcome defined in the field of application as follows: "Apply their knowledge to solve specific scientific, practical, information retrieval and teaching, educational objectives" as well as "To use modern methods of studying natural phenomena and processes to determine the practical significance commercial fish populations".

Also in the fields of investigations, the graduates are supposed to be "qualified to apply suitable methods to pursue investigations or detailed research as to technical - scientific issues in accordance with the status of their knowledge and understanding", which the programme pursues to achieve by enabling the graduates to conduct "ichthyology and hydrobiological field trials, treatment with fishing gear and fish hatchery stock" as well as

"advances in science and technology, the advanced domestic and foreign experience in the relevant work performed, area of expertise".

As for the programmes in Biotechnology, the learning outcomes show both the required level of qualification as well as content-wise design in line with the requirements of the subject-specific criteria of Technical Committee 10 – Biosciences. The subject-specific criteria foresee that the graduates "have acquired sound fundamental biology – relevant knowledge of mathematics and the natural sciences" as well as "have sound knowledge of the fundamentals of molecular, cell and organismic biology". This is partly given through the expected knowledge of "theoretical basics of fundamental sciences as relevant to his (her) profession and specialization" as well as of "essence, mechanisms and regularities of vital processes of organisms (microorganisms, plants, animals)" and "main achievements and development trends of modern biology and biotechnology". Further on, the requirement to "know theoretical and practical foundations of Plant Biotechnology, Animal Biotechnology, Biotechnology of Microorganisms; the main technologies of producing biotechnological products; main concepts, techniques and prospects of the development of Biotechnology" reflects the requirements of subject-specific criteria in the field of specialist competencies. Also here, the competences describing the Biotechnology Master`s programme are rather generic, and their subject-specific profile could be sharpened. Such formulation as "know theoretical basics of molecular biology and etc" is very broad and could be seen as a lack in focusing the programme. In the other definitions, the panel was able to see a clear programme profile. Some of definitions could however be fine-tuned.

On Master's level of the programme Biotechnology, the graduates are required to "have advanced their knowledge in core subjects, subject-relevant or interdisciplinary subjects" as well as "know theoretical basics of the solid backgrounds in biotechnological science, chemistry, botany, zoology, genetics, microbiology, molecular biology and etc", which corresponds to the requirement of subject-specific criteria expecting the graduates to "have gained subject-specific and interdisciplinary problem solving competence".

Also the requirements for social competences appear to be covered by the programmes : according to subject-specific criteria, the graduates must "have gained the ability to combine specialised knowledge of various component disciplines, carry out independent scientific work and organise, conduct and lead more complex projects as well as publish the results", which the university meets by expeting its graduates to "Know biological processes, occurring in vivo or in vitro conditions, their interrelationships and interdependencies; biodiversity of animal and plant organisms, the basic principles of environmental protection and management". The "social competences" defined by the subject-specific

criteria are presented in a very detailed way under the learning outcomes chapters analysis – synthesis – evaluation (e.g. “analyze, organize, time manage, critical thinking, problem solving the results of field and experimental studies”, “Create a strategy for the analysis of work processes and phenomena in the modern Biotechindustry” as well as “Be able to evaluate in all aspects of modern biological and technical knowledge”).

Also the Master’s programme Geobotany meets the requirements set by the Technical Committee. The subject-specific criteria expect the students to “have acquired social competences, such as abstraction ability, systems analytical thinking, capacity for teamwork, ability to communicate, international and intercultural experience and others, and are therefore especially prepared to take on leadership responsibilities”, which the university addresses by facilitating the ability “to accept responsibility for professional and scientific solutions”, “conduct joint research activities” or “develop and deepen their knowledge and acquire new skills at high professional level” as well as not least “have the personal qualities and skills needed for successful employment and requiring initiative and personal responsibility”.

In the statement, that the graduates should master the “nature, mechanisms and patterns of the vital processes of living organisms (microorganisms, plants and animals)” and possess “fundamental knowledge on the intersection of science, providing professional mobility in a changing world” reflects the expectation of the Technical Committee that the graduates “have gained subject-specific and interdisciplinary problem solving competence”.

The relevant stakeholders (students and teachers) confirmed that they are aware of the intended learning outcomes of the programmes as such, as well as of the modules and that they are accessible in different source (for teachers from the syllabi and from the module handbook, for students from the student’s guide, which however has not been presented to the panel). However, on the website of the university, no detailed information on the programmes is accessible. The learning outcomes represent a matter of interest for prospective students and also for potential employers. Therefore the respective learning outcomes of each programme must be easily accessible for all kind of interested stakeholders (students, professors and lecturers) and be published in the relevant regulative documents (examination regulations, .

The peers appreciate that employer representatives are involved into the design of the electives of all programmes. They observe a connection to the industry, since some of the relevant employers of the country are part time employed as teaching staff at the university for the study programmes under discussion. This allows direct feedback on the definition of intended learning outcomes, course design and study flow.

Criterion 2.3 Learning outcomes of the modules/module objectives

Evidence:

- cf. module description in the module handbook presented as annex to the self-assessment report
- Module handbook in the system UNIVER, used by the teaching personnel and students (individual log-in needed, in Russian/Kazakh only)

Preliminary assessment and analysis of the peers:

The panel deemed the module objectives to be generally in line with the programme objectives and learning outcomes, so that the programmes under review have shown to be based on all in all coherent concepts. The module handbooks are clearly structured and at least structure-wise contain all relevant information on most modules (besides final theses, internships and excursions), specifying module objectives, which reflect the programme learning outcomes in a concretised way, as well as examination forms, regulations for prerequisites, timing (semesters), teaching forms etc. The module descriptions are not available on the faculty's website. Nevertheless the peers trust the confirmation by students and teachers that they are familiar with the module descriptions, which they get as a printed version at the faculty or which they can access in the internal ICT-programme management system UNIVER. The panel was not provided with access to the system, so that this information could not be confirmed. It must be ensured that every student and every teaching staff member have access the module handbook so that the module objectives are transparent to the key stakeholders.

Since no detailed module description of the internships is available, there seem also not to exist a clear definition of the learning outcomes for the external internships. For the bachelor and master programmes Geobotany, the module descriptions of excursions are missing too, in spite of the fact that they are of crucial relevance for successful professional and academic development of the students and also a clear prerequisite for the defense of the master's thesis, as the panel was told during the audit. Such descriptions are needed in order to provide students and employers with a clear definition of what is expected from the internships beforehand. The peers learned that in every internship contract, learning targets would be defined individually. A clear description of the intended learning outcomes from the internships should be however developed on the level of the programme and would serve as orientation base for the selection and acceptance of individual internhips.

It has moreover not become clear to the peers why the State Compulsory Modules are not included in the module descriptions of the Master's programme Biotechnology. According to the structural overview presented on the page 4, 13 ECTS or 8 Kazakh Credits

are foreseen for the State Compulsory Modules. However, none is mentioned in the module handbook or in the curricular overview of this programme.

As for the module handbook of the two programmes (bachelor, master) Fish Industry and Industrial Fishery, the presented content overview is rather misleading than an orientation which it is meant to be. The peers found two tables of content, one stating apparently only modules for the Master's programe, the other one stating both Bachelor's and Master's modules but indicating completely wrong page numbers (e.g. Integrated methods of fish-farming is supposed to be on the page 91, whereas the document itself encloses only 61 pages). Although the peers panel still could find out what modules are supposed to be on Master's level, such errors could mislead students and teachers. It could be also helpful to separate the module handbook in a Bachelor's and a Master's document.

Moreover, State Compulsory Modules and Social Communicative modules are almost identical, so that the panel did not become final clarity on whether or not the students have to take these modules twice. Moreover, whereas the modules cover a broad field of general biology/ecology, the handbook does not show focal aspects. Besides that, general ecosystem-related modules are from similar to identical in both Bachelor and Master`s programmes, on which an additional statement of the programme managers is required.

As far as Geobotany is concerned, the module handbook version is labeled as a Module Handbook for Biotechnology (Master/PhD), although the content is obviously belonging to Geobotany. The Self evaluation report with the Curriculum was confusing (e.g. pages 17-18 and 21-22 belong to the phD-program) and difficult to bring in the line with the module handbook, so that it was not possible to reconstruct the curriculum completely.

The module descriptions provided the basic information on the modules but where partly contradicting the information given in the curricula, so that for the panel, it was not possible to fully reconstruct the contents of every single module listed in the curriculum. The peers strongly suggest to avoid all of this kind of mistakes in official documents.

Another issue as far as module handbooks are concerned is related to the examination methods. The panel could not see that the approach to students' assessment is competence-oriented and would follow the learning outcome logic nor that it is aligned to the module objectives. This aspect is treated in a detailed way in the chapter 4 of this report (Exams). All in all, the module descriptions do provide the major part of the necessary information.

Criterion 2.4 Job market perspectives and practical relevance

Evidence:

- Overview of companies for practical training / internships
- Description of expected learning outcomes in the SAR

Preliminary assessment and analysis of the peers:

The contents of the programmes presented for the review show a high level of practical relevance, be it in the field of application of scientific findings in the industry, which is clearly the case for the programmes Fish Industry and Industrial Fishery as well as Biotechnology, or providing the necessary skills and competencies for research work, which is the professional field of Geobotany graduates. The peers understood the programme managers' concept a "permanent internship", prescribing a two weeks teaching internship (knowledge transfer, team competencies, analytical skills) in the second year of studies and an industrial internship in the third year focused on handling the equipment and conducting practical experiments, whereas another internship, performed in the last year of studies, is aligned to the Bachelor's thesis topic and aims at collecting relevant material and conducting first analyses. The students confirmed that they often use these periods of time for additional excursions (in case of Geobotany) or field studies. This procedure is definitely an asset and was seen by the peers as beneficial for the overall professional development of students.

External practical placements are organised by the students themselves, in case where it is needed, assisted by their advisors. The teaching personnel mentioned that students usually work on a concrete project during their internship which they are supposed to solve independently and to report on their findings after the completion of the internship. Even the practice of defenses of such reports is in place. However, as mentioned above, it is not clear what content-wise relevance the internship must have, since there is no concrete module description for the internships, which impedes the clear assessment of the actual level.

The panel learned that the HEI offers a range of research internships in its own research facilities and in cooperating external research institutes, such as Institute of General Genetics and Cytology, MES Institute of Problems of Biology and Biotechnology, Scientific Research Institute of Ecology Problems for Biotechnology for the Biotechnology programme, Kapchagay spawning and nursery farm and Chilyk pond farm for Fish industry and Industrial Fishery programme. For Geobotany, no concrete internship partners were stated, and besides the Center for Remote Sensing and GIS "Terra" Institute of of Botany and Phytointroductionof MES RK for Geobotany. These measures are a good tool of early

motivation of the students to proceed with the academic career. This practice was also deemed as positive, since it allows for a direct application of the achieved knowledge into practice at an early stage.

The HEI has presented a detailed qualitative overview of the job placement of its alumni by indicating the work field (“academic”, “industry”, “not by major”) and has proven that it is following up the career path of its students carefully. Several examples for relevant cooperation for offering additional lectures have also been presented, among which also future employers are teaching in the programmes under review.

The peers deemed it to be a good practice that employers are included in the decision making processes for curriculum update (usually once a year), which has been mentioned by the programme coordinators and the teachers. Thanks to this practice, the HEI is able to align its education offers to a clear demand for its graduates. According to teachers and students the alumni of the programmes under review generally seem to be very successful as far as job placement is concerned.

Criterion 2.5 Admissions and entry requirements

Evidence:

- cf. Academic Policy of al-Farabi University, pp. 20-21.

Preliminary assessment and analysis of the peers:

The chapter „Admissions“ of the Academic Policy of the al-Farabi Kazakh National University as of 2014 (p. 20) clearly demonstrates the admission requirements for Bachelor applicants and also describes transparently what scoring is needed for being admitted to one of the National Universities, to which the al-Farabi University belongs, too. It stipulates as the basic requirement for Bachelor’s programme a High School and/or Professional School Diploma. Additionally, a successfully competed Unified National Test (UNT) is required. Since the obligatory state test is offering the option of one elective subject depending on the envisaged study discipline, which can be i.a. Physics, a good level of knowledge upon admission to the studies necessary for the achievement of the defined learning outcomes can be ensured. The regulation mentions also a separate method of testing, the so called complexe testing for international students; however, the panel has not found any written regulation for the recognition of studies conducted abroad. In the discussion with the programme coordinators and also with students, it was stated that any modules/courses attended abroad were easily recognized in the home university. The recognition procedures must be transparently described in official documents and made available to all interested parties. The panel has not been provided any official document

in which the recognition practices are mentioned, therefore the university is requested to provide such a document jointly with the statement of the university on this report.

The chapter „Admissions“ of the Academic Policy of the al-Farabi Kazakh National University as of 2014 (p. 21) stipulates as the basic admission and entry requirements for Master's programmes, including a good command of the English language, ensured by an obligatory test at the National Testing Center. The second part of the admission test consists in a field specific Program Based Written Exam conducted autonomously by the University's admissions commission and supervised by the rector and the department of the Academic affairs. This test consists of two theoretical subject-specific questions, whereas the third part is an essay. Since the admission commission consists of the department professors, checking the compliance of level of knowledge upon the admission with the requirements for successful achieving of the programme learning outcomes is ensured. Additionally, the HEI has the autonomy to define prerequisite courses obligatory for enrollment.

As for prospective students applying for the Master's programmes with a non-typical professional background (e.g. without a Bachelor's degree), no clear regulation for recognition of this performance was found, neither in self-assessment reports nor in the academic policy. For further assessment of the programmes, additional information on the current practice in place is needed.

Criterion 2.6 Curriculum/Content

Evidence:

- Curriculum / content overview from the self-assessment reports

Preliminary assessment and analysis of the peers:

The curricula descriptions presented to the panel are in most cases clear and transparent. The modules are offered in a subsequent way so that prerequisite modules and advanced modules are clearly visible from the programme concept. There are no repetitions of Bachelor's modules on Master's level, so that the curriculum design is adequate in order to assure the achievement of the learning outcomes.
As for both programmes in Biotechnology, they are taught on the interface of Biological Science, Technology and Engineering, Legal and economical frameworks as well as key aspects of food safety. There are additional modules concentrating on quality assurance. These respective competencies are achieved in the module Food diagnostics – quality control (MA) and partly also on Bachelor's level (Modern aspects of Food production).

On Bachelor's level, in the programme Biotechnology several individual education paths are offered, such as "Biotechnology of microorganisms", "Cell and molecular biotechnology", "Food biotech-nology", "Genetics technology", "Biotechnology of Environment", which according to the panel fully comply with international scientific practice and requirements of international labour markets. As for Master's level, following specializations are possible: cellular and molecular biotechnology, Biotechnology of microorganisms, Food biotechnology, Genetics technology, Ecological biotechnology. The panel deemed that these subjects are taught on a good level and prepare for practical placements (rather than research, cf. 5.3). However, in the Master's curriculum presented to the panel, State Core Modules are missing. The curriculum for the Master's programme should therefore be completed by including all relevant modules, last but not least also internships. The same is true for the descriptions of the programme Geobotany, which does not include internships, nor concrete descriptions of the electives, which are also not always deducible from the module handbook, and some of the modules are missing (cf. 2.3).

In case of the programme Fish industry and industrial fishery, the modules of the Bachelor's programme encompass a rather broad spectrum of topics of aquatic environment to aquaculture and fish related items. Several modules provide a sound knowledge of the fundamentals of natural sciences, especially Biology, Physics, Chemistry, more generally also in aquatic ecology. Aspects of pollution, food security, fish biology, stock theory, maladies, fishing gear as well as some general aspects of aquaculture are given. The module contents correspond to the subject-specific requirements of international educational standards. However, fundamental sciences aspects are overrepresented in the Bachelor's programme, whereas such themes as sustainable resource use, management, governance and policies issues (there are only 2 CPs on "Ecology and Sustainability") are rather underpresented. This is still sufficient for the Bachelor's level, but since these topics are also not very relevant in the Master's programme, the panel encourages the programme coordinators to strengthen the applied topics as well as the non natural science aspects.
Moreover, the panel recommended rearranging the sequence of the modules, in order to move the modules of necessary fundamentals and basic knowledge rather to an early stage of the studies. This would concern such modules as biochemistry, general genetics, bio productivity of water bodies, limnology and hydrobionts. By doing so, double input (e.g. in limnology and hydrobiology) can be avoided and the study flow can hereby be optimized.
As for Master's, here the key objective lies in enabling students to find a scientific approach for problem solution as well as to find the right tools and transfer to employees, planning research and get familiar with resource management. The modules of the mas-

ter programme focus on imparting knowledge on scientific working principles, scientific skills with interfaces to commerce and resource exploitation, combined with teaching and leadership competences. Possible specializations, starting in the second year, are fish Diversity conservation, Hydrobiology and Fish Commerce. The panel deemed the study programme design to be coherent and transparent, as well as to allow for the achievement of the envisaged learning outcomes. However, especially on master's level, the fundamental research should play a more important role in order to gain respective knowledge for the various application aspects. This could be achieved by increasing the number of ECTS awarded for science-oriented modules rather than to application-oriented ones.

In the study programme, aspects of ecology such as foodweb dynamics in the upper trophic levels, habitat diversity and their carrying capacity with regard fish population size and yield need more attention. The same is true for fishing techniques (gear, pelagial and benthal) as well as for the various cultivation techniques in the light of comparability to international practices. Furthermore, such aspects as integrated management and communication with governance and policy bodies are not explicitly treated, at least according to the module handbook of the programme. Since these aspects are crucial for the professional activities of the graduates, the panel recommends to further fostering management skills and also the ability to deal with legal requirements to the Fish Industry at Master's level. The peers noted that since Kazakhstan has a rather limited aquatic environments, aquaculture should probably play a major role in the contents. Fishing gear and the environmental impact of pelagic and benthic fishing is only marginally mentioned by now and could also be strengthened.

As for the Master's programme Geobotany, the programme is rather focusing on scientific work and research activities than practical placements. The modules of Geobotany focus on development of skills and techniques of floral, morphological and taxonomic studies of biological objects, methods of herbarization of plants, identification of the seasonal dynamics of plant communities and working with devices for geobotanical descriptions, geobotanical mapping and zoning. However, some practically relevant modules are worthwhile mentioning, being for instance "Conservation of biological diversity and sustainable use of plant cover" as well as Indicator Geobotany, including economic characteristics of the species or Regional Geobotany aiming at giving recommendation/consultations on the environmentally sound use of grasslands. Also an obligatory excursion on the protection of flora and fauna is foreseen, some of them are conducted with future employers (e.g. with GP Company, at least 6 weeks of expeditions (7 KCP). However, the panel found some weaknesses in planning of field research. The interviews with students have shown that they have no real knowledge on how such a field study is conceptualised and planned. Further on, the panel recommends to include practical

modules on methodology of Biostatistics into the curriculum, which would further broaden the horizon of students as far as geobotanical methodology is concerned. Further on, the panel recommends to further fostering students' independent work and creativity. Case studies, project-based learning in small groups, teaching in seminars rather than in lectures would be helpful for this purpose. In this format, use of use of relevant equipment GPS, Areal Photography etc. could be fostered, which the panel also deemed to be rather week in the actual curriculum. These skills are necessary for a sound compilation of the Master theses, so that the students should be prepared for use of this equipment during the studies already. Further on, most recent finding on the climate change should be included into the curriculum of Geobotany, since the consequences of climate change are crucial for the development of ecosystems, with effects on agriculture and nature conservation strategies.

The subject-specific parts of the curricula of the programmes in the review were deemed to be all in all content-wise coherent, clear, and in accordance with the newest tendencies of the related disciplines. The objectives matrix presented for each programme beforehand was also considered as commendable. During the discussion talks, it was mentioned that around 30% of all modules are being updated every year. For doing so, regular feedback rounds between teachers, lecturers, HEI leadership and the ministry are organized. Slight changes to the contents can be made internally, i.g. on the level of the faculty (after such an initiative has been started, there is a discussion during a chair meeting). Also employer's association is being consulted regularly on curriculum update issues, which usually happens in the process even before the university's council is involved.

The panel found it commendable that there were various forms of internships. Although the panel has not been given any written description of the internships and the intended learning outcomes as a module beforehand, from the audit talks with programme coordinators and teachers, some additional information on the internships were gained. There is always a contract with the learning targets compiled in advance to every internship, and that upon completion of such placement the students present a report in an academic defense setting. These findings support the impression of the internships to be on a good and adequate level and to be all in all on a demanding level. These internship targets should clearly mark the difference between the internships taken in the 2, 3 or 4 year of study and also be aligned with the overall Learning Outcomes of the programme. Thus, the new description should also be included in the objectives matrix.

The peers confirm that there is a clear level difference between contents of the Bachelor's and the Master's programmes, visible from the thesis works, course papers and experiments conducted in the classes.

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

The university submitted a revised definition of programme objectives which reflect more clearly the subject-specific profile of the programme. The programme objectives are accessible to key stake holders in the student's guide, which is placed at the university's website. The subcriterion 2.1 is herewith fulfilled for the programme Biotechnology, for other programmes, the assessment of the peers remains unchanged.

The learning outcomes of the programme Biotechnology are now accessible at the university's website to all interested partners, so that the criterion 2.2 is also deemed as fulfilled. The university stated that the module handbooks with respective module objectives for Master's programme Biotechnology are accessible as a printed version, and showed that for Bachelor's also online on the relevant website of the department and also in the student's guide.

The statement of the panel on the rearrangement of the sequence of the module in the Bachelor's programme Fish Industry and Industrial Fishery remains valid since the university did not provide any statement on the necessity of the curriculum design as implemented for the time being.

The university explained in its statement convincingly the difference of the State Compulsory modules (obligatory curriculum) and Social-Communicative Module (elective courses) and presented revised module descriptions, which show a clear content-wise difference of the modules. Also detailed module descriptions for internships were presented, which satisfy international standards. The module description for final thesis was not submitted with the statement of the university, thus the panel strongly encourages to include it as soon as possible to the already good developed documentation of the programme Biotechnology. The relevant module documentation of the Bachelor's and Master's programmes Biotechnology corresponds to the requirements of ASIIN. For other programmes, the statement of the peers remains without changes.

The abstracts of the Master's thesis showed that the level of the teaching leads knowledge and research competencies adequate for Master's level, on the same time being another proof for rather poor command of English.

The university did not provide any statement on the admission criteria for applicants with an atypical background so that the panel deems the elaboration of respective documents as a necessary step towards increased transparency and equality of treatment.

3. Degree Programme: Structures, Methods & Implementation

Criterion 3.1 Structure and modularity

Evidence:

- Curricula presented in the self-assessment reports
- Academic Policy, p. 71

Preliminary assessment and analysis of the peers:

The modules have the following size: from one to three units (courses, workshops), taught in three different forms (lectures, seminars, laboratory work) and having a workload between 5 and 10 ECTS. The modules build coherent packages of learning units, combining for instance theoretical courses with practical workshops. The Academic policy states that every module has to be completed within one semester time, which is the case in every programme and which facilitates student mobility. The university has 234 agreements for cooperation with foreign universities, among which there are already established and well running joint programmes on all levels (cf. p. 71 of the Policy). The student mobility (but also staff mobility within another funding chapter) is ensured by the state funding programme Bolashak awarding grants for studying abroad for different periods of time for especially gifted students. Students have confirmed that modules completed abroad are easily recognized by the home university. An excellent internationalization strategy is being pursued in case of the PhD programmes, where every student has got a foreign supervisor whom he/she visits at least once a year for two months.

Still, on every level it was mentioned that the internationalization initiatives can still be further developed, and that this is the part of the university's general strategy to strengthen the internationalization initiatives by additional funding and further expanding the networks. Especially, the student mobility could be further enhanced.

As for the final thesis, both on Bachelor's as well as Master's level, the writing and the defense of the thesis is taken as a separate module, e. g. the relevant research internships are not included in the calculation of the ECTS awarded for the theses. The pre-diploma practice in Bachelor's programmes start in the eighth semester and takes twelve weeks of experimental work. Officially, the students have only four weeks for compilation of the final version of the thesis. As for Master's, the fourth semester is completely free for compilation of the thesis and conducting the respective experiments. The students stated that they had only six weeks for writing the final thesis, and the rest of time was used for experiments. This is the reason for a rather low rate of awarded ECTS compared to the

Western universities (seven ECTS for Master's thesis for Biotechnology, cf. p. 4; for Bachelor's, it is not indicated at all, neither in the overview on the p. 4, nor in the curriculum overview; for Fish Industry and Geobotany, the ECTS awarded for the final thesis are not specified at all – cf. also chapter 3.2), which might cause problems for international mobility of the graduates. The panel therefore recommends to revise this practice and to think of including the research internship, de facto serving for gaining/gathering material for the thesis, into the final thesis module, which would have the positive effect that through additional ECTS numbers, the weighting of the final thesis in the final grade would increase.

Criterion 3.2 Workload and credit points

Evidence:

- cf. self-assessment reports
- Academic policy

Preliminary assessment and analysis of the peers:

In Kazakhstan, a national credit system in place significantly differs from the European credit system. Kazakh credit point system is based on the contact hours, more specifically, on teacher's workload, which explains why, for instance, completion of a Master's thesis is awarded with 5 ECTS, whereas teachers, as well as students have confirmed that the students have the whole last semester for completion of the thesis. This approach to the ECTS does not to correspond to the usual grading/weighting system in Europe, which could be an obstacle in recognition processes abroad, e. g. in other Bologna signatory countries. The panel recommends setting up a new, coherent ECTS calculation. In case of the Master thesis, it could be a new module design with a new allocation of ECTS, reflecting the whole range of the work to be done for completing the thesis. The ECTS for frontal (i.g. teaching-centered) lecturing could be reduced in favour of awarding more ECTS for research and independent lab work. The panel deemed that for the long-term success of the programme, it is necessary to undertake this kind of change, and strongly recommends revising the given ECTS distribution.

According to the institution, 1 ECTS credit equates to 25 – 30 hours of student workload, depending on the programme. The actual workload of the students remained unclear, since the calculation of the ECTS stated in the curricula does not seem to reflect the factual level of workload. In the self assessment reports it was mentioned that neither homework nor guided self-study or student self-study are included in the calculation of the ECTS workload, whereas in the original concept of the ECTS, all kind of work connect-

ed to the studies and foreseen as necessary for achieving the intended learning outcomes are to be calculated in the workload.

Further on, due to the fact that the curricula overviews do not contain the complete information on the ECTS awarded for the final theses and partly also for internships, the panel was not able to gain definite clarity on the distribution of the workload. Also the statement provided by the representatives of rectorate and programme coordinators, how Kazakh credit points, calculated on the base of teacher's workload, are translated into student's workload, did not make the issue clearer. The panel therefore required a clear written statement on how this conversion is done.
The panel deemed the student workload of the programmes to be rather high. Given that a Bachelor of Science programme in Industrial Fishery foresees 7020 hours, which equals 259 ECTS, an average workload in a week would amount to 65 hours (taking two semesters with each 14 week). This workload would be not critical if the time of semester breaks would be included into the calculation, but since the panel was told that semester break is free of lectures and no ECTS are awarded, the workload seems to be significantly higher than on average expected in the European Higher Education Area. According to the ECTS User's guide, the workload of a student should not exceed the average workload of an employee, e.g. 40 hours a week. The total of ECTS awarded for one term should not exceed 30, or 60 ECTS a year, whereas in the case of this programme with 259 ECTS for four years, the number is already exceeded. The panel has seen that besides the lecture, there is a wide range of internships, seminar, laboratory works as well as guided self study sessions. However, given the workload as described above, there the time for independent self study seems to be missing but should be available at least in the last years of Bachelor studies and essentially in the Master studies in order to allow for additional research, implementing of extra-curricular but study-related projects, etc.

The quality of teaching and the level of learning do not seem to be negatively affected although the actual workload seems to be unusually high. That is why, before providing a final assessment of this criterion, the panel needs a complete overview of all obligatory components of the programme with the corresponding ECTS-number.

Criterion 3.3 Educational methods

Evidence:

- Discussion rounds with programme coordinators and teaching staff (no written information delivered on the educational methods)

Preliminary assessment and analysis of the peers:

During the audit, the panel visited a commercial fishery as one of five comparable companies where students get practical training in the fields. The panel also learned that there are places where geobotanists go to excursions, which take up to six weeks of applied field studies. Since the panel was not presented a thorough description of the respective modules, not only for Fish Industry programmes, but also for the programme Geobotany, the content-wise design of the modules is not assessable for the moment (cf. criterion 2.4).

The peers acknowledge that the principle of uniting teaching and research according to the programme coordinators and the representatives of the rector is meant to be one of the priority areas as far as teaching methods are concerned. Round 30% of all modules are revised and updated annually in order to ensure their up-to-datedness and to include the most recent findings from the research projects into the teaching process. The students confirmed that they often use the equipment of the partnering research institutes for their own experiments, and that some of them work or take internships in the framework of joint projects conducted with the Faculty of Biology and Biotechnology.

The teachers have stated the following forms of interactive teaching as preferred ones, showing an awareness of the importance for integrating them adequately to different contexts: case studies, discussions, essays, presentations, work in small groups. For updating the methodology used, the university invites regularly international experts for conducting specialized trainings which every interested party might join. There are also didactical-methodological seminars at every chair in order to enable exchange. The teachers have shared their thoughts on supporting methods for very advanced students, who are ahead of the rest of the group, and named i.a. delivering additional tasks, inviting them to “scientific clubs” (colloquia for specialized exchange, available at almost every department), helping to organize student’s conferences with publication options and early involvement into the research projects as possible solutions. For students who have difficulties to keep the tempo or to catch up, there are special classes integrated into the schedule **in** order to support them additionally. In case they fail during the examination period, they can attend additional classes during the summer term.

Also the obligatory modules of guided self study (homework to be delivered before the intermediate test) and self study with teacher (mostly independently conducted work on additional tasks with input questions and guidance upon request from teacher’s side) are all in all a good practice to support students in the learning process. The results from the guided self study are used not only for the monitoring of continuous student work, but also as a tool to harmonize the different performance levels. After first three weeks, the teachers analyze performance of the students and adjust the tasks, making the learning “steps” for weaker students smaller, by providing additional manuals or other materials,

but not losing the aim to have them all on the same level by the end of the term, they all should catch up to the expected level. The necessity of offering such hours should be however thoroughly monitored and the expected added value should be assessed and evaluated, since such lectures might cause student's overload. Given that the workload seems to be rather high already now, it could be worthwhile revising the policy of offering guided self study, especially on Master's level.

Also a good practice is the advanced use of the ICT programme UNIVER, in which not only normative documents such as course description, intended learning outcomes and bibliography are provided, but also teaching materials, teacher's notes and other course relevant updates are available.

All in all, the peers deemed that the teaching methods in place support the achievement of the intended learning outcomes.

Criterion 3.4 Support and advice

Evidence:

- Academic policy
- Discussions with the programme coordinators, teaching staff and students

Preliminary assessment and analysis of the peers:
According to the information sources described above, following support and advice offers are regarded to be in place: tutorial-scientific advisor, advisor available in the student dormitories, counseling on international mobility, medical center, support to families as well as student's representation and different student counseling organizations. Although no written information on the support and advice facilities was provided, the panel has gained insights into counseling process from discussion talks with all involved stakeholders. The peers found the enthusiastic support attitude shown by the teachers as well as obvious trust from the student's side very positive. The students reassured the peers to know whom to address in case they have any trouble with their studies, which indicates that the teachers and responsible managers practice and open-door-mentality. The panel could confirm that the offer on support and advice is above the average of what is in place in Europe (for instance, offering tutoring hours/supervision in the student dormitories is rather unknown to the peers so far).

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

The university has not provided any statement on the preliminary assessment of the peers, thus the recommendations of the panel on combining the research practice and

the final thesis to one module in order to catch up credit-wise with the international average as well as on the workload caused by guided self-study especially on Master's level remains without change.

Since the panel deemed the overall workload of the programme to be rather high and no evidence of the opposite was submitted, it is necessary to reduce the actual workload of the students so that the average time spent on the studies does not exceed the average working time of an employee. The average workload should not exceed 30 ECTS per semester with a workload of 25-30 ECTS. Moreover, the panel did not see a fixed ratio for conversion of ECTS, cf. the revised module descriptions of State Compulsory Modules and Social Communicative Modules so that here again, there is a clear lack of transparency and consistency. The follow-up of this requirement will be assessed upon re-accreditation.

4. Examination: System, Concept & Implementation

Criterion 4 Exams: System, concept & implementation

Evidence:

- Self- assessment reports
- Academic Policy

Preliminary assessment and analysis of the peers:

According to the module handbooks and the information gathered during the discussions on site, examination methods described subsequently are foreseen in all the programmes under review: written exams, defense of reports on internships, students' independent work (results to be presented at the intermediate control), multiple-choice-tests, final thesis, including a defense of the results.

The respective method of examination is stated in the module handbook, which is meant to be accessible to all internal stakeholders via the ICT system UNIVER (a proof/a confirmation for this is requested under 2.3). The panel deemed the cooperation with external parties (industry as well as external research institutes) for conducting applied research within the Bachelor's and Master's thesis to be laudable. Another good approach to the examination procedures is the invitation of external teaching staff to co-conduct the assessment of the student exams. It is also laudable that employers are always chairing the exam commission which convenes for final thesis defense procedure.
There is also a practice of intermediate controls, which consist of weekly papers/work examples, but also activity in the class. The intermediate control counts as 60% of the final module assessment grade, whereas 40% of the final grade are constituted by the final assessment results.

In the programmes under review, the final module written exam consists mostly of 2 theoretical and one practical question, or in some cases of additional practical/lab task to be solve. In case the student chooses an oral exam, there are 40 minutes for preparation of 3 theoretical questions or case studies, after which individual assessment based on these questions is conducted. The discussion with teachers and students showed that there is a positive shared vision by both parties and no overload due to the exam number was reported, although the students confirmed that the intermediate control weeks cause an especially high workload. That is why the panel recommended to monitor this practice in order to avoid student overload in cases when students have several such controls at the same time. Moreover, the panel recommended revising the practice of a completely free

decision of students whether they want to be assessed in the written or in the oral form (cf. self-assessment report of new material sciences, p. 9). The panel was told that it is possible to graduate without having taken any written or oral exam and vice-versa. However, the panel stressed that the examination methods should enable checking the achievement of the learning outcomes, among which the HEI expects the graduates to "have acquired social competences, such as abstraction ability, systems analytical thinking, capacity for teamwork, **ability to communicate**, international and intercultural experience and others, and are therefore especially prepared to take on leadership responsibilities" (Master's progarmme Geobotany). It is surely very positive for students, and a good practice to support student's extracurricular initiatives such as taking part in the scientific clubs in order to strengthen their debate abilities; given that it is not an obligatory part of the curriculum, it can only be considered as an additional training possibility. It is recommended that the HEI revises its approach to examination by introducing at least one obligatory oral examination (before the final state exam, since the students should be given the possibility to practice beforehand), shifting towards a competence-oriented assessment by coherently checking the achievement of the defined learning outcomes.

The exam periods, and also the number of exams (usually between 5 or 7) are announced to students in advance, so that all in all, they stated to have enough time for preparation. The option of make-up exams (so called summer semesters), is in place. These follow a short and intensive period of time in which repeating of the module contents with a teacher is facilitated. This option is not free of charge, i.g. the student is supposed to pay a fee calculated on the base of the credit points awarded for the summer semester. In case the student fails again, he or she loses the right for the scholarship (so the studies are to be continued on a paid basis. The panel deemed for positive that in case of falling sick, students were able to take leave and retake the exams at a later point in time, before the completion of 4th year of study. As another strong point, the additional advisory service provided to students was mentioned, since in the discussion rounds, it was mentioned several times, that the exam regulations are additionally being explained by the academic supervisor on a regular base. As for disabled students, the programme coordinators confirmed that there are individual solutions for every case, discusses at the chair and confirmed by the relevant peers.

During the audit visit, the panel was told that the students can choose whether to take an oral or a written exam at the end of the term. This approach might be comfortable for students but does not ensure that they are prepared to different tasks connected to their professional activity and aligned to the intended learning outcomes – solving case studies, defending new or critical hypothesis in front of specialist or non-specialist audience. The

panel therefore emphasized the necessity of applying a competence-oriented teaching and assessment approach, which would align the module objectives with the selected assessment forms. According to the module handbook however, the examination methods are presented as to be prescribed, so that the information gained during the site visit contradicts the paper-based evidences. In Geobotany for instance, only written exams are mentioned, and only a standard definition of the examination form is stated (first interim control, second interim control, written exam consisting of 2 theoretical questions and one practical). The panel however encourages to pursue a procedure of preparation for such an important exam as the defense on long-term basis. Besides having written and/or oral exams on a certain occasions, in the semester before the experimental work of the thesis starts, students should give an oral presentation on the hypothesis, time plan of work and methodology to be used in order to discuss the feasibility of the planned work. Considering the fact that the Master's students have to pass at least one very important oral exam – the defense of the thesis – the panel considers it to be a necessity to have several oral exams during the study time for having practice with handling such situations.

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

The panel deemed the practice of the free choice by students as far as examination forms are concerned not to reflect the competence-oriented approach to assessment. Since the university did not submit any additional comment on this issue, nor on the potential risk of overload by the intermediate controls, the assessment of the panel remains unchanged.

5. Resources

Criterion 5.1 Staff involved

Evidence:

- cf. staff handbook
- list of and information about research projects in the self-assessment report
- academic Policy

Preliminary assessment and analysis of the peers:

The university management has shown a consistent strategy of attracting and developing qualified staff for the transformation of al-Farabi University to a research university, which was formulated as the crucial strategic aim for the next years. First of all, one of

key statements of the rector's representatives was that every member of teaching staff should teach and do research. The staff is strongly encouraged to apply for additional grants on the one hand, as well as to continuously enhance the teaching performance. Secondly, about 70% of staff is recruited from alumni, so that the majority of PhD students who graduate from the al-Farabi University mostly stay at the university as teaching staff. Thirdly, in order to gain additional staff for electives, the potential employers and generally industry representatives are employed as part-time teachers. Moreover, the university has signed a considerable number of agreements with foreign universities and research institutions (mainly in Russia, Western Europe, and Asia) abroad as well as in Kazakh facilitating joint staff exchange and staff development. All these initiatives ensure an adequate human resource base for the programme implementation.

The panel learned that the al-Farabi university facilitates regular teaching process for the Russian department. Inspite of a significantly lower intake (e.g. in Biotechnology, the smallest cohort amounts to three students, in Geobotany even to one only). Still, the university enables the full range of choice as far as electives are concerned. In the opposite case, if they have more applicants than capacities, the courses are split and offered in a parallel way, so that the free choice of electives is ensured. This approach to linguistic diversity and equal treatment of the official languages of Kazakhstan is very laudable.

The Academic Policy states that the department must have at least 10 full-time teaching staffs, and 40% of them must have academic degrees (PhD). The staff handbook shows not only a quantitative fulfilment of this criterion, but also a broad variety of research projects conducted in the faculty in the last 5 years, which ensures a good scientific base for adequate implementation of the programmes as far as achieving the learning outcomes is concerned.

The workload of the staff as presented in the academic policy for different groups and qualification levels of teachers specifies the quantity of teaching obligations in relation to the overall workload. The additional workload produced by other activities mentioned by the teaching staff during the audit, as for instance administrative obligation, supervisor obligations, workload produced by conducting classes of guided self study might however cause an overload with teaching and administrative activities and impede proper research work. The faculty should therefore strive for a more flexible solution of handling teaching hours and administration obligation in order to enable additional research performance.

Generally, the documentation of the staff resources should be enhanced. For instance, in the staff handbook of the Fishery programmes, 31 teaching staff names are mentioned, 29 curriculae vitae are presented in the staff handbook. As for the module handbook, five names are not occurring in the staff handbook, whereas 20 names from the staff hand-

book are not occurring in the module handbook. The staff documentation must be coherent and clear.

Criterion 5.2 Staff development

Evidence:

- Acceptance of non-teaching periods for research purposes
- Capacity development offers / Further education

Preliminary assessment and analysis of the peers:
The programme coordinators and also the first vice-rector stated that in the point of view of the University's policy, in order to become the best teacher, one must be a good researcher. That is why the key strategy of staff development is enabling as many opportunities for research as possible. The peers recognize the university's support for its researchers and teachers in their further development. On the one hand, there are several options for conducting internships abroad for younger researchers financed either by the faculty, or by the Bolashak programme, the state-driven funding programme for academic development, aiming not least at supporting the development of their English skills by working abroad. On the other hand, in some faculties, there are options of research sabbaticals for one year by keeping the full salary paid; however, the Faculty of Biology and Biotechnology has by now not benefited from this option. Moreover, in theory, in some cases where additional time for research is needed and a sound research plan is presented, the ratio of research and teaching can be discussed and decreased individually for conducting additional research activities, but at the Faculty this option has not been used so far.

The regular policy of further training for staff requires for every staff member at least one further training within a period of five years. Methodology, study programme management etc. are most frequent topics of such trainings. There are didactical-methodological seminars held at every chair monthly in order to facilitate additional exchange on teaching process.

In order to encourage staff to further enhance the teaching performance, there are university-wide, but also national competitions for "Best HEI teacher", which contain a prize money as well as the possibility to go abroad for teaching, research activities and further training. These prizes are awarded for outstanding performance as far as preparation of teaching materials, number of monographs, manuals, and publications with a non-zero impact-factor. The university strives for involving all teachers into research activities. However, for the time being, the teaching staff is only paid for the assigned teaching hours, and research is only rewarded from the additional projects, once the grants have

been allocated. Therefore, the teaching workload is rather high, and little time remains for conducting research activities. Some faculties have already cut the number of teaching hours for especially motivated professors, but it is rather an exception so far. The university pays great attention to regular publications in international impact-factor journals, which is already demonstrated by the fact that PhD students are supposed to prove significant publication activity (cf. p. 43 of the Academic Policy at least one article at international journals with impact factor higher than zero, at least three articles at national journals recommended by the Ministry of Education and Science at least three conference materials).

The panel considered as commendable the additional motivation measure for staff by increasing their payment based on Key Performance Indicators. All in all, the staff development measures presented during the audit were deemed as substantial and supportive for successful implementation of the programme.

Criterion 5.3 Institutional environment, financial and physical resources

Evidence:

- Description of facilities and laboratories as presented in the self-assessment reports
- Discussion rounds with all relevant stakeholders

Preliminary assessment and analysis of the peers:

The peers found all the necessary equipment for implementation of necessary teaching internships, lab works, practical seminars etc. in the labs and deemed the resources available for implementation of all programmes to be sufficient for achievement of the learning outcomes.

Generally, the university administration appears to be supportive as far as purchase of new equipment is concerned. For the time being, around 99% of all equipment are bought upon application to the university's administration. The students confirmed that they have all the facilities they need for studies. They are frequently using laboratories of different departments, especially chemistry, since the faculty has durable cooperations there. A rather slow and bureaucratic procedure for buying chemical reagents impedes, however, sometimes the smooth run of experimental work. The university should think of ways for facilitating the ordering process in order to enable punctual implementation of the necessary equipment.

As for Geobotany, remote sensing facilities, equipment for taking areal photos, for PH-measurements as well as extensive data bases of Kazakhstan flora were presented. Some of these resources were funded from research projects. However, no GPS equipment is available so far, which would be very helpful at least for master's students. Further on, the students have access to the software for biostatistics called "statistica", which is used in most CIS-countries and therefore allows for joint project work. Further examples of free available software used in Geobotany are R, TURBOVEG, JUICE and PAST. GIS maps are available only with additional funds, usually from projects.

The international connections of the university allow for student exchange as well as staff exchange. Every year, several students go abroad supported by the state grant Bolashak or private means. Also several staff member go abroad (mostly to England - Cardiff University School of Medicine Department of Medical Genetics, Haematology and Pathology, Russia – Moscow and Tomsk State Universities and China - Xingjian University) in the last year and several professors from France, Japan and Germany were invited as guest lecturers and researchers. The panel appreciates the initiatives of increasing the student and teacher's mobility, which in the long term will definitely enhance the quality of the programmes, and can only encourage the university's leadership to further support and develop these initiatives.

Moreover, the students have access to the research facilities of such bodies as Institute for Problems of Biology and Biotechnology, Institute of Ecology, which allows for an early involvement into the research activities and give them a chance for placing first publications (in Master's programme, publications are a requirement for the admission to the defense, so that many students start publishing very early under supervision of their advisors, cf. 3.4).

The peers have learned from students that they can access not only teaching laboratories, but also research facilities in case they have a promising scientific project. After discussion of this project with the director of the institute, a timing arrangement for the laboratory use must be met. Another positive aspect about the infrastructure is the facilitation of access to different super computers for students, e.g. in the Institute of Astronomy and Physics, but also in some partner institutions located in Germany and China. The positive

statement of the students about the availability and accessibility of the relevant equipment might be connected to the reason that their work is adjusted to the equipment available. The cooperation with other universities or companies is a good solution for the equipment issue. However, aligned to an envisaged research profile the university should develop a timeline for getting sufficiently equipped with instruments, lab facilities and well trained technicians. In terms of the availability of literature the university should extend its existing cooperation. Getting fast information and use of new scientific results on a global scale will be a conditio sine qua non and underlines the necessity of English communication.

There are some examples of successful implementation of new research clusters based on private and state funding, as for instance the bio-medical cluster, in which also foreign investors take part. A new cooperation has been established with the University of Rostock which is now offering its chemical laboratory for researchers and PhD student research projects. Since the PhD student mobility is strongly supported by the University (at least 2 months of every year, the student spend abroad), this offer is frequently requested.

The panel has not seen any courses taught in English, although this would definitely support the internationalization strategy of the University. The library provides a number of foreign periodicals from such countries as USA, Japan, Great Britain, Russia, out of which the majority is edited in the English language, not least to mention the license for using the Springer sources. These initiatives are crucial for the successful achievement of the intended learning outcomes, since in each programme, the competence to work in international teams and to follow the most recent scientific developments on the international level has been defined as a must. At latest in the PhD studies, the students are supposed to publish their research results also in foreign languages, so that the fundamentals of the English skills must be solidly strengthened already in the Bachelor's and Master's studies. That is why the panel encourages further increasing the number of specialized courses taught in English and broadening the thematic spectrum of the English journals.

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

The university did not provide any comment on the remarks of the panel, so that its assessment as described above remains valid. The criterion 5 is herewith fulfilled.

6. Quality Management: Further Development of Degree Programmes

Criterion 6.1 Quality assurance & further development

Evidence:

- Academic Policy
- University's website

Preliminary assessment and analysis of the peers:
In the self-assessment reports, the quality assurance procedures are not explicitly outlined, nor are they presented in detail in the academic policy. This part is a crucial evidence for mature and sound internal quality assurance system, and a lack of this part in the report might be considered as a proof of importance which is attached (or not) to these aspects.

However, a description of the quality assurance system is presented on the university's website, which allowed for an assessment and a comment by the peers. The university has implemented a Quality Management System (QMS), which has been certified with ISO 9001:2008 in 2003 already. Since then, the quality assurance measures of the university a being monitored by ISO annually. The quality assurance processes are described in the student's guide, which every first-year student gets at the beginning of the academic year. The university makes an effort to make every student familiar with the management policies in order to motivate them to take part in the annual anonymous surveying. There are also rankings of professors made by students (this mark partly influences the evaluation of the key performance indicators).

The university has shown the strong connection to external stakeholders as another good practice, whose involvement into implementation and the continuous improvement of the programme is one of the crucial instruments for further quality enhancement. The fact that the industry representatives (employer's association) are asked about further development of curriculum and single courses even before the academic council shows a very strong orientation of the HEI to the practical application of teaching activities.

Criterion 6.2 Instruments, methods and data

Evidence:

- Academic Policy
- University's website

Preliminary assessment and analysis of the peers:

Besides the surveying procedures, direct feedback is possible by addressing the course teacher as well as the cohort supervisor, and the students confirmed that this is the preferred way of giving feedback. The student's feedback is systematically used for further development of the courses, and students indeed see improvements based on their comments. However, many students resigned from filling in the official questionnaires, since the loop closing does not yet work properly – they do not get any insight into the final evaluation, and no consequences from the assessment are communicated to them. The alternative questionnaires distributed by the student's parliament are more popular by the students, since the results are made public and discussed after evaluation. Additional efficiency of the process is ensured by the fact that the questionnaires are distributed on very short notice and collected in the next break, so that almost everybody fills them in.

Also professor's ranking is conducted annually. The methodological bureau of the university collects and analyses the feedback for implementation of possible enhancement suggestions. For closing the feedback loop, the institution has stated e.g. the following practice: in cases where a professor's evaluation is rather negative, the methodological commission conducts a monitoring visit in his class and gives enhancement hints and advises afterwards.

As one of the QM tools, also IT-based system UNIVER can be considered, were monitoring of cohort's performance was possible on the spot. Having this overview, the university has the possibility to react in case of significant changes in the average performance of the students. The panel considered this tool useful and it can be considered a good practice to have a nearly paperless programme management, providing students all the relevant regulation in one place.

The panel noticed that the issue of alumni career follow-up is managed in a very different way in the programmes of the same department. Whereas the programmes Biotechnology follow up the professional path of their alumni in a qualitative way, stating the institutions they are working in. Other programmes provided just numbers, which is fair enough, but the very different implementation of one and the same QMS system is remarkable. In this case, the panel can encourages to follow the example of Biotechnology

and to set up a list of institutions where alumni are employed, which would facilitate job counseling activities, internship placements, etc. The panel has moreover missed the analysis of the data presented, detailed comments on the procedures for e.g. increasing the number of alumni employed according to their major or finding out why some alumni are working in a not subject-related field. Similarly, no analysis of drop-out rates has been presented. Although during the discussion rounds, the programme coordinators and teachers showed that they do take preventive measures in order to support students in difficult situations (disease, personal problems) where a threat of a drop out is in place, the panel considers it an important part of a self-assessment process. For the re-accreditation, it is therefore recommended to complete the missing data (explicit statistics on dropouts, explicit statistics on time needed for finding a job placement after graduation) and also to provide analysis of data and a short description of measures undertaken as a reaction to the respective findings.

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

The university deems the criterion to be fulfilled but insists on re-assessing the implementation of recommendations on the methodology as stated above upon re-accreditation.

7. Documentation & Transparency

Criterion 7.1 Relevant Regulations

Evidence:

- Academic policy of al-Farabi State National University for 2014, containing
  - admission regulation
  - examination regulation
  - fee regulation
  - policies of staff recruiting and staff development

Preliminary assessment and analysis of the peers:

The panel found it commendable that the university has not only published the quality management processes on the website with a detailed explanation of the relevant steps, but that it has also compiled a code of conduct for teaching staff and also for students, which assures transparency what respective parties can expect from each other.

The regulations provided in the academic policy are written in a clear and good understandable way. The policy is available to the students and the teaching staff, but the panel

has found no proof for the accessibility of the document to the graduates of the secondary education to start their studies at the al-Farabi university. Since the information the policy contains are relevant also for this stakeholder target group, publishing the policy completely or at least partly by selecting the relevant chapters for study applicants on the website. This measure would increase the transparence for study applicants which would lead to an increase attractiveness of the university.

Criterion 7.2 Diploma Supplement and Certificate

Evidence:

- Diploma supplement as delivered via e-mail on October 16th 2014

Preliminary assessment and analysis of the peers:

Samples of the Diploma Supplement in English language have been e-mailed to the ASIIN office after the audit. The example presented provides information about the level and contents of the study programme, as well as the marks and the GPA. In the submitted example of the diploma supplement, no statistical data on the cohort's performance are included. The panel recommends including the statistical data of the cohort's performance into the diploma supplement, in order to allow for comparability of individual's performance level with the rest of the cohort.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 7:

It is recommended to include statistical data into the degree certificate / diploma supplement in accordance with the ECTS User Guide to assist external parties in interpreting the individual degree.

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:

D 1. A written statement on how KCP are converted into ECTS; a completed overview of all obligatory components of a study programme with the corresponding ECTS award
D 2. Examples of MA projects conducted jointly with external institutions
D 3. Fishery: Abstracts of BA and MA thesis in English language
D 4. Document stating the recognition procedures for courses completed abroad
D 5. Document stating the admission procedures for applicants for Master's programme with an atypical profile (e.g. without a Bachelor's degree, but with a sound professional back ground)

E Comment of the Higher Education Institution

The institution provided a detailed statement.

F Summary: Peer recommendations

Taking into account the additional information and the comments given by the 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	Subject-specific Label	Maximum duration of accreditation
Bachelor of Science - Biotechnology	With requirements	n.a.	30.09.2020
Master of Science – Biotechnology	With requirements	n.a.	30.09.2020
Bachelor of Agricultural Sciences - Fish industry and industrial fishery	With requirements	n.a.	30.09.2020
Master of Agricultural Sciences - Fish industry and industrial fishery	With requirements	n.a.	30.09.2020
Master on the speciality Geobotany	With requirements	n.a.	30.09.2020

Requirements

For all degree programmes

A 1. (ASIIN 4) The student's assessments need to be aligned to the module objectives. The current practice of leaving to students the free choice of examination method can only be continued if all examination methods from which to choose equally suit the single learning objectives of a module.

A 2. (ASIIN 2.5) The recognition procedures must be transparently described in official documents and made available to all interested parties.

A 3. (ASIIN 4) The students' workload per semester must be set at a level that avoids structural pressure on training quality. In line with the ECTS Users' Guide, the workload per semester must not exceed a maximum of 900h. The ECTS credits awarded must be adapted accordingly.

For the Bachelor's and Master's degree programme Fish Industry and Industrial Fishery and the Master's degree programme Geobotany

A 4. (ASIIN 2.2). The learning outcomes must be published and available to all stakeholders (especially to students and staff).

A 5. (ASIIN 2.3) The module descriptions must be updated according to the comments made in the accreditation report (all kinds of internships and excursions must be included; clearer alignment of module learning outcomes to the subject-specific criteria; a module description for the final thesis must be included)

Recommendations

Recommendations for all degree programmes

E 1. (ASIIN 3.1) It is recommended to officially combine the research practice and the final thesis to one module according to the current practice in order to realistically reflect the weight of the final thesis in the overall credit point scoring.

E 2. (ASIIN 3.3) It is recommended to monitor the practice of guided self-study in order to balance the additional workload it causes with the added value it might have for the students. For Master's students, additional working time for unguided self study and independent research is crucial, so that the overload by obligatory modules should be avoided in order to enable time slots for research activities.

E 3. (ASIIN 4) In order to avoid student's overload the practice of conducting two intermediate controls in each course should be monitored with regard to its usefulness for achieving the learning outcomes and continuing the study process by the students.

E 4. (ASIIN 6.2) It is recommended to consistently implement the quality management processes foreseen, including the closing of feedback loops and analyze all relevant, collected data, such as alumni job placements, drop-out rates, etc.

E 5. (ASIIN 7.2) It is recommended to include statistical data into the degree certificate / diploma supplement in accordance with the ECTS Users' Guide to assist external parties in interpreting the individual degree.

Recommendations for the Bachelor's and Master's degree programme Fish Industry and Industrial Fishery and the Master's degree programme Geobotany

E 6. (ASIIN 1) It is recommended to enrich the formal specifications on a study programme as presented on the website with further information such as learning outcomes, duration of the programmes, possible trajectories as well as possibilities of internships and job placements.

Recommendations for the Bachelor's degree programme Fish Industry and Industrial Fishery

E 7. (ASIIN 2.3) It is recommended to move t the modules of necessary fundamentals and basic knowledge to an early stage of the studies in order to avoid double input and optimise the study flow.

Recommendations for the Master's degree programme Fish Industry and Industrial Fishery

E 8. (ASIIN 2.6) It is recommended to strengthen the following aspects in the course of the programme in order to better align it to the intended learning outcomes (ecological aspects in the curriculum – foodweb dynamics in the upper trophic levels, habitat diversity and their carrying capacity with regard fish population size and yield: fishing techniques; cultivation techniques; management skills, including the ability to deal with legal requirements).

G Comment of the Technical Committees

Technical Committee 08 – Agronomy, Nutritional Sciences and Landscape Architecture (07.11.2014)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee follows the vote of the peers and recommends an accreditation with requirements.

The Technical Committee 08 – Agronomy, Nutritional Sciences and Landscape Architecture recommends the award of the seals as follows:

Degree Programme	ASIIN seal	Subject-specific Label	Maximum duration of accreditation
Ba Biotechnology	With requirements	n.a.	30.09.2020
Ma Biotechnology	With requirements	n.a.	30.09.2020
Ba Fish Industry and Industrial Fishery	With requirements	n.a.	30.09.2020
Ma Fish Industry and Industrial Fishery	With requirements	n.a.	30.09.2020
Ma Geobotany	With requirements	n.a.	30.09.2020

Technical Committee 10 – Life Sciences (10.11.2014)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee follows the vote of the peers and recommends an accreditation with requirements.

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

Degree Programme	ASIIN seal	Subject-specific Label	Maximum duration of accreditation
Ba Biotechnology	With requirements	n.a.	30.09.2020
Ma Biotechnology	With requirements	n.a.	30.09.2020
Ba Fish Industry and Industrial Fishery	With requirements	n.a.	30.09.2020
Ma Fish Industry and Industrial Fishery	With requirements	n.a.	30.09.2020
Ma Geobotany	With requirements	n.a.	30.09.2020

H Decision of the Accreditation Commission (05.12.2014)

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

The Accreditation Commission adapts the wording of requirement A 3. by omitting the last two sentences. Requirement A 1. is reframed to cover the intended meaning more fittingly. Otherwise the Accreditation Commission follows the vote of the peers and the Technical Committees.

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

Degree Programme	ASIIN seal	Subject-specific Label	Maximum duration of accreditation
Ba Biotechnology	With requirements	n.a.	30.09.2020
Ma Biotechnology	With requirements	n.a.	30.09.2020
Ba Fish Industry and Industrial Fishery	With requirements	n.a.	30.09.2020
Ma Fish Industry and Industrial Fishery	With requirements	n.a.	30.09.2020
Ma Geobotany	With requirements	n.a.	30.09.2020

Requirements

For all degree programmes

A 1. (ASIIN 4) The types of examinations have to be designed to support the attainment of the intended learning outcomes.

A 2. (ASIIN 2.5) The recognition procedures must be transparently described in official documents and made available to all interested parties.

A 3. (ASIIN 4) The students' workload per semester must be set at a level that avoids structural pressure on training quality.

For the Bachelor's and Master's degree programme Fish Industry and Industrial Fishery and the Master's degree programme Geobotany

A 4. (ASIIN 2.2). The learning outcomes must be published and available to all stakeholders (especially to students and staff).

A 5. (ASIIN 2.3) The module descriptions must be updated according to the comments made in the accreditation report (all kinds of internships and excursions must be included; clearer alignment of module learning outcomes to the subject-specific criteria; a module description for the final thesis must be included)

Recommendations

Recommendations for all degree programmes

E 1. (ASIIN 3.1) It is recommended to officially combine the research practice and the final thesis to one module according to the current practice in order to realistically reflect the weight of the final thesis in the overall credit point scoring.

E 2. (ASIIN 3.3) It is recommended to monitor the practice of guided self-study in order to balance the additional workload it causes with the added value it might have for the students. For Master's students, additional working time for unguided self study and independent research is crucial, so that the overload by obligatory modules should be avoided in order to enable time slots for research activities.

E 3. (ASIIN 4) In order to avoid student's overload the practice of conducting two intermediate controls in each course should be monitored with regard to its usefulness for achieving the learning outcomes and continuing the study process by the students.

E 4. (ASIIN 6.2) It is recommended to consistently implement the quality management processes foreseen, including the closing of feedback loops and analyze all relevant, collected data, such as alumni job placements, drop-out rates, etc.

E 5. (ASIIN 7.2) It is recommended to include statistical data into the degree certificate / diploma supplement in accordance with the ECTS Users' Guide to assist external parties in interpreting the individual degree.

Recommendations for the Bachelor's and Master's degree programme Fish Industry and Industrial Fishery nad the Master's degree programme Geobotany

E 6. (ASIIN 1) It is recommended to enrich the formal specifications on a study programme as presented on the website with further information such as learning outcomes, duration of the programmes, possible trajectories as well as possibilities of internships and job placements.

Recommendations for the Bachelor's degree programme Fish Industry and Industrial Fishery

E 7. (ASIIN 2.3) It is recommended to move t the modules of necessary fundamentals and basic knowledge to an early stage of the studies in order to avoid double input and optimise the study flow.

Recommendations for the Master's degree programme Fish Industry and Industrial Fishery

E 8. (ASIIN 2.6) It is recommended to strengthen the following aspects in the course of the programme in order to better align it to the intended learning outcomes (ecological aspects in the curriculum – foodweb dynamics in the upper trophic levels, habitat diversity and their carrying capacity with regard fish population size and yield: fishing techniques; cultivation techniques; management skills, including the ability to deal with legal requirements).

I Fulfillment of Requirements (22.10.2015)

The university provides extensive material and tries to document in which way the requirements have been fulfilled.

Peer Recommendation (07.11.2015)

The peers judge all requirements to be fulfilled.

Comment of the Technical Committee 08 – Agronomy, Nutritional Sciences and Landscape Architecture (19.11.2015)

The Technical Committee discusses the accreditation procedure and decides that all requirements are fulfilled.

Comment of the Technical Committee 10 – Life Sciences (26.11.2015)

The Technical Committee discusses the accreditation procedure and decides that requirements A3 and A5 are not fulfilled, because the calculation of the student workload is inconsistent and the description of the final thesis is missing.

Decision of the Accreditation Commission (11.12.2015)

The Accreditation Commission discusses the accreditation procedure and decides that requirements A3 and A5 are not fulfilled.

The Accreditation Commission decides about the award of seals as follows:

Degree Programme	ASIIN seal	Subject-specific Label	Maximum duration of accreditation
Ba Biotechnology	requirements 3, 5 not fulfilled 6 months prolongation	n.a.	30.09.2020
Ma Biotechnology	requirements 3, 5 not fulfilled 6 months prolongation	n.a.	30.09.2020
Ba Fish Industry and Industrial Fishery	requirements 3, 5 not fulfilled 6 months prolongation	n.a.	30.09.2020
Ma Fish Industry and Industrial Fishery	requirements 3, 5 not fulfilled 6 months prolongation	n.a.	30.09.2020
Ma Geobotany	requirements 3, 5 not fulfilled 6 months prolongation	n.a.	30.09.2020

The Accreditation Commission justifies its decision as follows:

Requirement A3:

The calculation of the students` workload in the module descriptions is misleading and incomprehensible. Therefore the total workload per semester cannot be evaluated.

Requirement A5:

The module descriptions were updated but the description of the final thesis is still missing.

J Fulfilment of Requirements (01.07.2016)

Analysis of the peers and the Technical Committees 08 – Agronomy, Nutritional Sciences and Landscape Architecture and 10 –Life Sciences (02.06.2016)

The peers and the Technical Committees judge the requirements to be fulfilled.

Decision of the Accreditation Committee (01.07.2016)

The Accreditation Committee decides to extend the accreditation term as follows:

Degree Programme	ASIIN-seal	Subject-specific labels	Duration of accreditation
Ba Biotechnology	All requirements fulfilled*	--	30.09.2020
Ma Biotechnology	All requirements fulfilled*	--	30.09.2020
Ba Fish Industry and Industrial Fishery	All requirements fulfilled*	--	30.09.2020
Ma Fish Industry and Industrial Fishery	All requirements fulfilled*	--	30.09.2020
Ma Geobotany	All requirements fulfilled*	--	30.09.2020
Ba Biotechnology	All requirements fulfilled*	--	30.09.2020