ASIIN Certification Report

PhD Programmes
Biotechnology
Biology
Geobotany

Provided by
Kazakh National University named after al-Farabi

Version: 11 November 2014

Table of Content

A About the Certification Process

Title of the PhD Programmes	**Previous ASIIN certification**
Biotechnology (6D070100)	No
Biology (6D060700)	No
Geobotany (6D061300)	No
Date of the contract: 20.09.2013 **Submission of the final version of the self-assessment report:** 22.08.2014 **Date of the onsite visit:** 11.09.2014 **at: al-Farabi Kazakh National University, main campus, Faculty of Biology and Biotechnology**	
Peer panel: Prof. Dr. Bodo von Bodungen, Leibniz Institute for Baltic Sea Research, Warnemünde Prof. Dr. Dušan Palić, Ludwig-Maximilians-University of Munich Dipl.-Biol. Dr.rer.nat.habil. Christian Berg, University of Graz Hans Kuhn, Altona Diagnostics, Hamburg Ekaterina Astafyeva, South-Kazakhstan State University, Shymkent (student representative)	
Representative of the ASIIN headquarter Mila Zarkh, M.A.	
Responsible decision-making committee: Certification committee	
Criteria used: Standards for the Certification of (Further) Education and Training for courses and modules related to Computer Sciences, Technology, Natural Sciences and Business Economics as of 27.07.11. European Standards and Guidelines as of 2009 (3rd edition).	

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 PhD Programmes

a) Name of the course	b) Degree awarded upon conclusion	c) Mode of Study	d) Duration & Credit Points	e) First time of offer & Intake rhythm	f) Number of students per intake	g) Fees
PhD Programme Biotechnology (6D070100)	PhD in Biotechnology	Full time	6 Semester/ 75 Kazakh Credit Points (112.5 ECTS)	Winter term 2008/2009, annual intake	Varies depending on state grants between 1 and 3	N/A
PhD Programme Biology (6D060700)	PhD in Biology	Full time	6 Semester/ 75 Kazakh Credit Points (112.5 ECTS)	Winter term 2009/2010, annual intake	Varies depending on state grants; between 4 and 14	N/A
PhD Programme Geobotany (6D061300)	PhD in Geobotany	Full time	6 Semester/ 75 Kazakh Credit Points (112.5 ECTS)	Winter term, 2012/2013 annual intake	Varies depending on state grants; between 1 and 3	N/A

For the PhD Programme Biotechnology (6D070100), the self-assessment report states the following **intended learning outcomes**:

"**Knowledge:**

1. know the main trends in modern theoretical and applied aspects of biotechnology;
2. know the principles of biotechnology products with high quality and high-margin;
3. know the basics and principles for the development of drugs, devices, and equipment for biotechnology research based on modern methods of screening, predicting the functions and structures of molecular marking, transgenesis, research in the field of nanobiotechnology, etc.;
4. know principles, methods, techniques, tools, laying in the basis of scientific and applied activities at all stages of the formation of creative solutions: from the formulation laboratory and pilot studies prior to their implementation;
5. know social responsibility in science and education;
6. know scientific terminology in foreign language for better scientific communication.

Understanding

1. understand and comprehend the deep philosophical concepts of biological science, biotechnology in the development of the scientific world;
2. understand the theoretical foundations of biotechnological processes;
3. understand general scientific methodology of the biological and technical science;
4. understand principles of application of the achievements of biotechnological science to production;
5. understand principles of scientific, pedagogical and industrial ethics.

Results of training programs

Application

1. to apply of new information technologies in biotechnology research and production of biotechnological products;
2. to apply a range of knowledge and skills gained in the management of biotech science in the promotion of biotechnology programs in legislative, governmental, regional agencies and local governments to transfer their knowledge and achievements of colleagues and the scientific community;
3. to own and apply the modern techniques in biotechnology research;
4. to use modern technology to generate secure environment for scientific and industrial experiments;
5. to apply modern methods used for ongoing research, be able to generate new ideas, participate in the development of original approaches and methods of their solution;
6. to develop and implement projects for creation of new knowledge or practical applications in the relevant areas of biotechnology, as well as to adapt projects to possible unexpected situations.

Analysis

1. to analyze scientific, technical and patent information on the subject of research using specialized databases, the use of information technologies, including Internet-based technologies;
2. to analyze and interpret new knowledge in scientific study that meets the requirements of peer review in the field of scientific knowledge;
3. to analyze and critically assess the relevance and feasibility of new ideas;
4. to extract and analyze high-quality and relevant information from the quantitative data;
5. critically analyse present ideas and create own new ones.

Synthesis

1. be able to generate new ideas, to participate in the development of original

approaches and methods of their solutions;

2. be able to set up a research team, manage and develop a team relationship of cooperation, own methods of conflict resolution;
3. to formulate and solve problems in a new environment, taking into account the multi-disciplinary context;
4. preparing of scientific and technical reporting documentation, analysis and references, documentation for participation in competitions of scientific projects, projects pharmacopoeia articles (state standards), the publication of research results;
5. development of biological methods for the disposal of industrial waste and harmful substances, the creation of closed technologies, development methodologies and conduct biomonitoring, the solution of other problems related to the protection of the environment;
6. be able to develop and implement projects for creation of new knowledge or practical applications in the relevant areas of biotechnology, as well as to adapt projects to possible unexpected situations.

Evaluation:

1. be able to evaluate the modern system of organizing and financing scientific research;
2. raising and solving appropriate tasks in scientific researches;
3. be able critically evaluate received scientific results, applied methods and techniques;
4. be able to evaluate and choose costing methods that are acceptable to the specific industry;
5. be able to evaluate in all aspects of modern biological and technical knowledge;
6. be able to evaluate critically the leadership and team work organization in scientific researches."

The following curriculum is presented for the **PhD programme Biotechnology:**

Title of modules	**Course code**	**Title of courses**	**Credit**	**Unit**	**Lec/ prac/ Lab.**	**Sem**
		I. Taught Component (54 ECTS)				
		Compulsory State Module	**3**	4.5		
1. State	OGM	Development and Production of	3	4.5	2/1/0	1

Compulsory Module (3 credits)	7201	Biotechnological Products				
		Elective Modules of Professional Specialization	**15**	22.5		
Elective Modules of Professional Specialization 01 15 credits		**6D070101 - Cell and Molecular Biotechnology**				
	Module name	**Modern methods in biotechnology** EMPS1				
	7202 MMB	Methods of molecular biotechnology	3	4.5	2/1/0	1
	7203 PT	Proteomic technologies	2	3	1/1/0	1
	Module name	**Molecular biotechnology of living organisms** EMPS2				
	7204 MBP	Molecular biotechnology of prokaryotes	3	4.5	2/1/0	1
	7205 MBE	Molecular biotechnology of eukaryotes	2	3	1/1/0	2
	Module name	**Bionanotechnologies and modeling** EMPS3				
	7206 BNT	Bionanotechnology	3	4.5	2/1/0	2
	7207 CMIB	Computer modeling in biotechnology	2	3	1/1/0	2
		6D070102-Molecular genetics				
	Module name	**Medical-genetical diagnostics EMPS1**				
Elective Modules of Professional Specialization 02	7202 KG	Clinical genetics	3	4.5	2/1/0	1
	7203 GD	Genediagnostics	2	3	1/1/0	1
	Module name	**Genomics and dispersive analysis EMPS2**				
	7204 GMMAG	Genomics and molecular methods of genome analysis	3	4.5	2/1/0	1
	7205 DAB	Dispersive analysis in biotechnology	2	3	1/1/0	2
	Mod-	**Molecular genetics and selection of plants, commercial biotechnolo-**				

	ule name	**gy EMPS3**				
	7206 KB	Commercial biotechnology	3	4.5	2/1/0	2
	7207 MGSK R	Molecular genetics and selection of cultural plants	2	3	1/1/0	2
		6D070103-Ecological biotechnology				
	Module name	**Microorganisms and bioremediation EMPS 1**				
Elective Modules of Professional Specialization 03	7202 BBKPP	Bioavailability, Biotransformation of Xenobiotics and Natural Polymers	3	4.5	2/1/0	1
	7203 SAB	Modern aspects of bioremediation of anthropogenically disturbed ecosystems	2	3	1/1/0	1
	Module name	**Pathogenic plants and bioremediation EMPS 2**				
	7204 FTZR	Phythopathology and technologies of plants defence	3	4.5	2/1/0	1
	7205 FA	Phythoaccumulation	2	3	1/1/0	2
	Module name	**Bioenergetics of microorganisms EMPS 3**				
	7206 BFM	Bioenergy of phototrophic microorganisms	3	4.5	2/1/0	2
	7207 BVM	Biotechnology of hydrogen-producing microorganisms	2	3	1/1/0	2
		6D070104-Biotechnology of microorganisms				
	Module name	**Molecular biotechnology EMPS 1**				
Elective Modules of Professional Specialization 04	7202 MBM	Molecular biology of microorganisms	3	4.5	2/1/0	1
	7203 MBFM	Molecular biology of photosynthetic microorganisms	2	3	1/1/0	1
	Module name	**Interactions of microorganisms and problems of photobiotechnology EMPS 2**				
	7204	Intracellular interactions of micro-	3	4.5	2/1/0	1

	IIM	organisms				
	7205 SPFB	Modern problems of photobiotechnology	2	3	1/1/0	2
	Module name	**Modern aspects of biotechnology EMPS3**				
	7206 ME	Metabolic engineering	3	4.5	2/1/0	2
	7207 NPPPM	New approaches improve the productivity of microorganisms	2	3	1/1/0	2
Elective Modules of Professional Specialization 05		**6D070105-Food biotechnology**				
	Module name	**Biotechnological and biogenic potential of food sources EMPS 1**				
	7202 BPPSOSH	Biotechnological potential of food raw materials and agricultural waste	3	4.5	2/1/0	1
	7203 BPPS	Biogenic potential of food raw materials	2	3	1/1/0	1
	Module name	**Food raw materials as a multicomponent, multifunctional biological system EMPS 2**				
	7204 SMIGMS	Modern methods of research of genetically modified raw materials	3	4.5	2/1/0	1
	7205 TOBP	Theoretical basis of nutritional biochemistry	2	3	1/1/0	2
	Module name	**New sources and methods of processing food raw materials EMPS 3**				
	7206 RNTPPS	The development of new technologies for processing of raw food	3	4.5	2/1/0	2
	7207 NPPRMP	New approaches in the development of dairy products	2	3	1/1/0	2
		Modules of Individual Educational Paths	**18**	27		
Modules of Individual Educational Paths 01 (IEP1) 18 credits		**6D070101 - Cell and Molecular Biotechnology**				
	IEP 1	Molecular Biotechnology				
	Module name	**Biological membranes MIOT 1**				

	8301 MPB	Membrane processes in biotechnology	3	4.5	2/1/0	3
	8302 BM	Bioenergetic of membranes	3	4.5	2/1/0	3
	Module name	Medical biotechnology MIOT 2				
	8303 MTM	Molecular technologies in medicine	3	4.5	2/1/0	3
	8304 MI	Molecular immunology	3	4.5	2/1/0	4
	Module name	**Biotechnology of biologically active substances MIOT 3**				
	8305 BBAV	Biotechnology of biologically active substances	3	4.5	2/1/0	4
	8306 FT	Phytotherapy	3	4.5	2/1/0	4
Modules of Individual Educational Paths 01 (IEP2) 18 credits						
	IEP 2	**Bioinformatics**				
	Module name	**Molecular and computational technologies in genomics MIOT 1**				
	8301 MTIG	Molecular technologies in genomic researches	3	4.5	2/1/0	3
	8302 CTIG	Calculative technologies in genomics	3	4.5	2/1/0	3
	Module name	**Molecular and computational technologies in proteomics MIOT 2**				
	8303 MTIP	Molecular technologies in proteomic researches	3	4.5	2/1/0	3
	8304 CTIP	Calculative technologies in proteomics	3	4.5	2/1/0	4
	Module name	**Molecular and computational technologies in biomedicine MIOT 3**				
	8305 MB	Molecular biomedicine	3	4.5	2/1/0	4
	8306 CTIB	Calculative technologies in biomedicine	3	4.5	2/1/0	4
		6D070102-Molecular genetics				
	IEP 1	**Molecular genetics**				
Modules of	Module	**Modern biotechnology of lower eukaryotes MIOT 1**				

Individual Educational Paths 02 (IEP 1) 18 credits	ule name					
	8301 TGD	Technologies of genome design	3	4.5	2/1/0	3
	8302 MBYM F	Modern biotechnology of yeast and mycelial fungus	3	4.5	2/1/0	3
	Mod-ule name	**Actual issues of oncogenetics and cellular engineering of humans and animals MIOT2**				
	8303 AO	Actual issues of oncogenetics	3	4.5	2/1/0	3
	8304 CEHA	Cellular engineering of humans and animals	3	4.5	2/1/0	4
	Mod-ule name	**Plant signalomics MIOT3**				
	8305 PS	Plant signalomics	3	4.5	2/1/0	4
	8306 ISS	Intracellular signal systems	3	4.5	2/1/0	4
		6D070103- Ecological biotechnol-ogy				
	IEP 1	**Ecological biotechnology**				
Modules of Individual Educational Paths 03 (IEP 1) 18 credits	Mod-ule name	**Microbial Technology for Environmental Protection MIOT 1**				
	8301 DCPFR ES	Design of combination preparatus for the restored ecosystem	3	4.5	2/1/0	3
	8302 MMT MI	Modern microbial technology in the mining industry	3	4.5	2/1/0	3
	Mod-ule name	**Ecophysiology of microorganisms MIOT 2**				
	8303G M	Geophysiology of microorganism	3	4.5	2/1/0	3
	8304 PEMD	Physiology and ecology of microor-ganisms-destructors	3	4.5	2/1/0	4
	Mod-ule name	**Oxidative stress and stability organisms MIOT 3**				
	8305	Oxidative stress	3	4.5	2/1/0	4

	OS					
	8306 MMOR	Molecular mechanisms of organisms resistance	3	4.5	2/1/0	4
		6D070104- Biotechnology of microorganisms				
	IEP 1	**Microbial technologies**				
Modules of Individual Educational Paths 04 (IEP1) 18 credits	Module name	**Genetic engineering of microorganisms MIOT 1**				
	8301 GEPM	Genetic engineering of phototrophic microorganisms	3	4.5	2/1/0	3
	8302 BPB	Bacterial plasmids in Biotechnology	3	4.5	2/1/0	3
	Module name	**Technology products of microbial synthesis MIOT 2**				
	8303 MTFPMS	Modern technologies for products of microbial synthesis	3	4.5	2/1/0	3
	8304 NAOPSM	New approaches to obtaining and production of secondary metabolites	3	4.5	2/1/0	4
	Module name	**New technologies in industrial microbiology MIOT4**				
	8305 NBM	Nanobiotechnology in microbiology	3	4.5	2/1/0	4
	8306 DNTPRMW	The development of new technologies for processing of raw materials and waste	3	4.5	2/1/0	4
	IEP2	**Theoretical aspects of microbial biotechnology**				
Modules of Individual Educational Paths 04 (IEP2) 18 credits	Module name	Physiological characteristics of microorganisms MIOT1				
	8301 PAPM	Population aspects of the physiology of microorganisms	3	4.5	2/1/0	3
	8302 SPM	Stress physiology of microorganisms	3	4.5	2/1/0	3
	Module name	The relationship of microorganisms to other organisms MIOT 2				
	8303A	Applied aspects of microorganisms	3	4.5	2/1/0	3

	AOMP	persistence				
	8304M ARMP	Molecular aspects of the relation-ship of microorganisms and plants	3	4.5	2/1/0	4
	Mod-ule name	Molecular biology of microorganisms MIOT 3				
	8305 MBE	Molecular Biology of the Enterobacteriaceae	3	4.5	2/1/0	4
	8306 MBM	Molecular biology of micromycetes	3	4.5	2/1/0	4
		6D070105- Food biotechnology				
	IEP 1	**Food biotechnology and safety**				
Modules of Individual Educational Paths 05 (IEP1) 18 credits	Mod-ule name	**Food Safety MIOT 1**				
	8301FF AFS	Functional food and food safety	3	4.5	2/1/0	3
	8302M ABSFP	Modern aspects of biological safety of food production	3	4.5	2/1/0	3
	Mod-ule name	**The development of new methods of research of raw materials, food systems, dietary supplements and medicines, food MIOT 2**				
	8303 BMRM FS	Biochemical modification of raw materials and food systems	3	4.5	2/1/0	3
	8304 P SCBP	Production and use of starter cul-tures, biological products	3	4.5	2/1/0	4
	Mod-ule name	**Microorganisms of Food Production MIOT3**				
	8305 MBLS	Molecular biology of lactobacilli and Saccharomyces	3	4.5	2/1/0	4
	8306 DMSC	The development of multi-component starter cultures	3	4.5	2/1/0	4
	I. Additional Types of Training 34 credits (51 ECTS)					
Additional Types of Training 34 credits	NIRD	Doctoral Student's Reseach Work and Fullfilment of Dissertation	28	42		1-6
	PP	Professional Practice	6	9		2,3,4
	II. Final Attestation 5 credits					
Final Attes-tation	CE	Complex examination	1	1.5		6
	ZD	Dissertation Fullfilment and De-	4	6		6

5 credits		fence				
GRAND TOTAL			**75**	**(112,5 ECTS)**		

For the PhD Programme Biology (6D060700), the self-assessment report states the following **intended learning outcomes**:

" I. Knowledge

1. tendencies and urgent research directions in modern biology and corresponding research fields

2. methodology of science

3. achievements of world and domestic biological science and corresponding research fields

4. social responsibility in science and education

5. scientific terminology in native and foreign language for better scientific communication

II.Understanding

1. main stages of science development and principles of paradigm changing in science

2. methodological and subject specificity of natural science and corresponding research fields

3. current conceptions of world and domestic biological science in corresponding research fields

4. principles of application of the achievements of science to production

5. pedagogical and scientific ethics

Results of training programs

1. Application

1. to organize, design and realize scientific researches

2. to analyze, evaluate and compare theories, conceptions and obtained scientific data to provide deep outcomes and conclusions

3. to analyze and process data form various sources

4. to independently conduct scientific researches using modern tools and methods

5. to produce own new scientific ideas, assess and represent them to world scientific community

6. to choose and effectively exploit modern application methods in biology and interrelated sciencies

7. to level its own professional carrier

2. Analysis

1. critically assess chosen research direction, select appropriate methods and apply suitable research skills

2. design, level, realize scientific researches in corresponding biology fields

3. analyze data bases and publications to obtain relevant data in correspondent research field

4. critically analyze present ideas and create own new ones

3. Synthesis

1. critically analyze, assess and compare scientific theories and conceptions

2. skills in analytic and experimental scientific effort, design and prognose researches in corresponding biological fields

3. ability to create and present professional speeches, support scientific forums, conferences and seminars

4. skills in scientific communication and professional writing

5 understanding responsibility and creativeness in scientific research and pedagogical activity

6. principles of patent search and incorporeal right in scientific efforts

4. Evaluation

1. orientation in information flows

2. design and conducting theoretical and experimental research in corresponding fields

3. raising and solving appropriate tasks in scientific researches

4. leadership and team work organization in scientific researches

5. making and preparing to expert examination of research proposals

1. tendencies and urgent research directions in modern biology and corresponding research fields

2. methodology of science

3. achievements of world and domestic biological science and corresponding research fields

4. social responsibility in science and education

5. scientific terminology in native and foreing language for better scientific communication

5. Understanding

1. main stages of science development and principles of paradigm changing in science

2. methodological and subject specificity of natural science and corresponding research fields

3. current conceptions of world and domestic biological science in corresponding research fields

4. principles of fpplication of the achievements of science to production

5. pedagogical and scientific ethics"

The following **curriculum for <u>the programme Biology</u>** is presented:

Title of modules	Course code	**Title of courses**	Credit	**ECTS**	**Lec/prac/ Lab.**	**Sem.**
State **C**ompulsory Module (3 credits)	PMB 7201	Problems of modern biology	3	5	2+1+0	1
Elective Modules of Professional Specialization (15 credits)	**Research Direction 6D060701 - Biochemistry and cellular and molecular physiology**					
	EMPS 1 Modern technologies of researches		5	8		
	PT7202	Postgenomic technologies	3	5	2+1+0	1
	PP7202	Plant proteomics	2	3	1+1+0	2
	EMPS 2 Cellular and Molecular Methods of Physiology		5	8		
	SKMI7203	Modern cellular and molecular research methods	3	5	2+1+0	1

	MGIF7203	Methods of Genetic Engineering in Physiology	2	3	1+1+0	2
	EMPS 3 Metabolism regulation		5	8		
	MBAS7204	Methabolism of BAC	3	5	2+1+0	2
	MVS7204	Mechanisms of intracellular signalling	2	3	1+1+0	2
	Research Direction 6D060702 - Molecular and cellular biology					
	EMPS 1 Actual Problems of General and Molecular Genetics		5	8		
	PT7202	Actual Problems of General and Molecular Genetics	3	5	2+1+0	1
	PP7202	Analysis of variability of biological systems	2	3	1+1+0	2
	EMPS 2 Modern methods of molecular and cell biology		5			
	SKMI7203	Modern optical methods of cell investigation	3	5	2+1+0	2
	MGIF7203	Modern methods of molecular and cell biology	2	3	1+1+0	2
	EMPS 3 Stem cells in normal and pathological conditions		5	8		
	MBAS7204	Stem cells in pathogenesis	3	5	2+1+0	2
	MVS7204	Stem cells and cellular therapy	2	3	1+1+0	2
	Research Direction 6D060704 - Microbiology					
	EMPS 1 Physiology and biopolitics		5	8		
	MAFP7202	Molecular aspects of porkaryotes' physiology	3	5	2+1+0	1
	MEB7202	Microbial endocrinology amd biopolitics	2	3	1+1+0	2
	EMPS 2 Communication in microorganisms		5	8		
	PVM7203	Population relations in microorganisms	3	5	2+1+0	2
	SSM7203	Signalling stystems in microorganisms	2	3	1+1+0	2
	EMPS 3 Microorganisms productivity		5	8		

	FPM7204	Photosynthesis and microbial productivity	3	5	2+1+0	2
	SAPPM7204	Modern aspects of microbs bioproductivity increase	2	3	1+1+0	2
	Research direction – 6D060703 Biophysics and Biomedicine					
	EPMS 1 Selected chapters of Biophysics		5	8		
	IGB7202	Selected chapters of Biophysics	3	5	2+1+0	1
	BMDL7202	Biophysical methods of diagnostics and treatment	2	3	1+1+0	2
	EPMS 2 Principles of the general theory of functional systems		5	8		
	POTFS7203	Principles of the general theory of functional systems	3	5	2+1+0	1
	FSOG7203	The functional systems providing a homeostasis	2	3	1+1+0	2
	EPMS 3 Physiology of metabolism		5	8		
	FOBE7204	Physiology of metabolism	3	5	2+1+0	2
	IK7204	Immunology of cancerogenesis	2	3	1+1+0	2
	Research Direction 6D060705 - Biological monitoring and restoration of ecosystems					
	EMPS 1 Environment bioassay		5	8		
	MBE	Microorganisms and ecosystems' bioassay	3	5	2+1+0	1
	MOB	Methods and objects of bioassay	2	3	1+1+0	2
	EMPS 2 Microorganisms and Ecosystems' Bioremediation		5	8		
	MTZOC	Microbiological biotransformation of pollutants	3	5	2+1+0	2
	MTVNE	Microbial technologies of restoration of disturbed ecosystems	2	3	1+1+0	2
	EMPS 3 Bioindication of environment		5	8		

	OKSMB	Bioindication in environment quality asssessment	3	5	2+1+0	2
	KTBM	Computed technologies in biological monitoring	2	3	1+1+0	2
	Research Direction 6D060706 - Ecological genetics					
	EMPS 1 Genetic toxicology and genetically-active environmental factors		5	8		
	GT	Genetic toxicology	3	5	2+1+0	1
	VOMOS	Identification and assesment of mutagens in the environment	2	3	1+1+0	2
	EMPS 2 Human genetics		5	8		
	EAGCh	Ecological aspects of human genetics	3	5	2+1+0	1
	XGDNMZ	Chromosome and genetic diagnosis of inherited and multifactorial diseases	2	3	1+1+0	2
	EMPS 3 Environment bioassay		5	8		
	TPAM	Theoretical and applied aspects of mutagenesis	3	5	2+1+0	2
	APUOMF	Antimutagenesis and the problem of resistance to mutagenic factors	2	3	1+1+0	2
Modules of Individual Educational Paths		Module of Individual Educational Path 1	6	10	2(2+1+0)	3
		Module of Individual Educational Path 2	6	10	2(2+1+0)	3,4
		Module of Individual Educational Path 3	6	10	2(2+1+0)	4
Doctoral Student's Reseach Work and Fullfilment of Dissertation		Research Seminar I -VI	28			1-6
Professional Practice	**PP**	Pedagogical Practice	3	5		4
	IP	Research practice	3	5		3, 5
Final	**KE**	Complex Examination	1	2		

Attestation	**ZD**	Dissertation Fullfilment and Defence	4	7		6
TOTAL			75 credits (112,5 ECTS)			

For the PhD programme Geobotany (6D061300), the self-assessment report states the following **intended learning outcomes**:

I. Knowledge

1. bases 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, purchase of teaching experience at the university.

II.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

1. 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.

2. 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 create 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, develop the capacity for self-directed learning for continuing professional development.

3. 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;

4. 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.

Graduates of doctoral programs should:

- demonstrate the ability to create and interpret new knowledge by conducting high quality original research, which meets the requirements of the expert assessment in the field of scientific knowledge (peer-review), contributes to the development of the science sector and deserves publication in scientific journals;

- to demonstrate the existence of a considerable volume of scientific knowledge acquired in a systematic way and reflecting modern condition of geobotany or area of professional activity;

- to demonstrate the general ability to conceptualize, develop and implement the projects for the creation of new knowledge or practical applications on the topical areas of geobotany and the ability to adapt projects in light of emerging unforeseen problem situations;

- demonstrate a detailed understanding of the methods used for scientific studies and research in the field of geobotany;

- to be able to do qualified conclusions complex problems in the field of geobotany, often in conditions of absence of complete data,

- be able to clearly Express their ideas and opinions for both specialists and non-specialists;

- be able to further theoretical and applied scientific research and development at a high level, making a significant contribution to the creation of new ideas, approaches and methods in the field of geobotany;

- possess the personal qualities and systemic skills necessary for employment requiring the exercise personal responsibility and considerable self-initiative in complex and unpredictable situations."

The following **curriculum for <u>the programme Geobotany</u>** is presented:

Title of modules	**Course code**	**Title of courses**	**Credit**	**ECTS**	**Lec/ prac/ Lab.**	**Sem.**
1. State Compulsory Module (3 credits)	AVCM NRU **7201**	Assessment of the vegetation in the modern environmental	3	5	2+1+0	1
2. Elective modules of professional specialization **(15 credits)**	**7202**	Electives	3	5	*2+1+0*	1
	7203	Electives	3	5	*2+1+0*	1
	7204	Electives	3	5	*2+1+0*	2
	7205	Electives	3	5	*2+1+0*	2
	7206	Electives	3	5	*2+1+0*	2
3. *Modules of Individual Educational Paths*	***Modules of Individual Educational Paths 1***					
	ED 8301	Electives	3	5	1+2+0	3
	ED 8302	Electives	3	5	1+2+0	3
	ED 8303	Electives	3	5	1+2+0	3
	ED 8304	Electives	3	5	1+2+0	4
	ED 8305	Electives	3	5	1+2+0	4
	ED 8306	Electives	3	5	1+2+0	4

	3.3 Modules for Individual Educational Trajectories (IET)				
	MIOT 1 **Population geobotany**		**18**		
	EB 8301 Ethnobotany 1+2+0		3		3
	PBR 8302 Population biology of plants 1+2+0		3		3
	RKO 8303 Vegetation in Kazakhstan and its protection 1+2+0		3		3
	GS 8304 Grasslands studing 1+2+0		3		4
	Pb 8305 Paleobotany 1+2+0		3		4
	Lh 8306 Lichenology 1+2+0		3		4
4. Professional practice	PP	Pedagogical Practice	1	2	3
	IP	Research practice	3(1+2)	5	2,4
6. Doctoral student`s research work and fulfillment of dissertation	NIRD I	Research Seminar I	1	2	1
	NIRD II	Research Seminar II	1(3+4)	2	2
	NIRD III	Research Seminar III	1	2	3
	NIRDIV	Research Seminar IV	1(+8)	2	4
	NIRD V	Research Seminar V	3	5	5
	NIRD VI	Research Seminar VI	3(2+1)	5	6
5. Final attestation	KE	Complex Examination	1	2	4
	ZD	Dissertation Fullfilment and Defence	4	7	4
TOTAL			**75 US 112.5 ECTS**		

Since this curriculum does not provide any detail on the contents taught in the electives, nor is this information included in the module handbooks, the panel requires an example of a detailed curriculum in use which is also available to students (cf. 2.4).

C Peer Report for the ASIIN Certificate

1. Formal Information

Criterion 1.1 Formal Information

Evidence:

- Self assessment report

Preliminary assessment and analysis of the peers:

The self-assessment reports state the relevant formal information on duration, credit points and study form. The ECTS for respective programmes are stated in the self-assessment reports and curricula; the questions with regard to the credit point conversion are dealt with elsewhere in this report (criterion 3.2 Workload). In Kazakhstan, the education of PhD students is treated as a public procurement of qualified staff by State, that is why intake varies quite a lot due to the fact that the Ministry of Education and Science in Kazakhstan decides on an annual basis how many PhD graduates are needed each year and also what universities should take over the responsibility for their education. Therefore the programmes' capacities have not been conceived and strictly planned for a certain number of students, but are flexibly customized to the number of the grants allocated to Al-Farabi University for the current year (cf. also criterion 5.1 staff). The panel has seen that the regulation of intake by the Ministry of Education does ask for a high flexibility in the teaching staff and module contents. Too many or too few students in a particular programme can have a negative effect on the teaching quality which should be by all means avoided.

The panel could not find any additional formal information on the programmes on the website. The website merely presents a list containing the titles and the codes of all programmes, but no information on contents, expected competence profile or other details relevant for the stakeholders. Therefore the panel strongly recommends to publish the formal information on the respective website in order to ensure transparency for stakeholders and provide a source of information for potential employers of the graduates.

Criterion 1.2 Legal relationship: mutual rights and duties

Evidence:

- Academic Policy of the Al-Farabi University (accessible in Russian under http://www.kaznu.kz/content/files/pages/folder165/akadpol.pdf, ref. date 20.08.2014), English version submitted with the self-assessment reports

Preliminary assessment and analysis of the peers:

Mutual rights and duties are clearly described and transparently explained in the Academic Policy of the al-Farabi State University. The Academic Policy is accessible for every interested party at the website of the University in Russian language. This Russian version is more detailed and more extensive than the English translation presented to the panel beforehand together with the self-assessment report. Together with the findings from the onsite visit the shortened version of the Academic Policy has provided all the relevant information for the assessment.

The PhD students are not only paid scholarship for their studies but also are supported for conducting at least 2 months of research work abroad every year, there is a range of duties which they are supposed to fulfill (explained elsewhere in the report, e.g. criterion 3.3 teaching methodology). The same is true reciprocally for the Higher Education Institution and its staff which has to fulfill very high demands on publication activities and research outcomes. The panel found out that the allocation of grants is conducted on a very competitive base among all Kazakh Higher Education Institutions, and in case the university cannot prove that it has sufficient and adequately trained staff, the grants won't be allocated. That is why there are several regional universities which send their PhD-candidates to al-Farabi university for completing the programme there (cf. 2.3 Admission criteria).
It has not become very clear to the panel how much freedom and independence a student has got in the end as far as selection of his PhD topic is concerned, i.e. of the PhD topic has to fit into the specific research themes of his advisor. Independent research ideas of the students can contribute considerably on way to a research university, that is why a statement on this issue would be very appreciated.

The panel deemed the definition of mutual rights and duties to be transparent and adequate for successful implementation of the programme. All in all, the PhD students find a fruitful environment at the KAZNU and are well taken care of with regard to supervision and finances.

Final assessment of the peers after the comment of the Provider regarding criterion 1:

In its statement, the university showed that the theme of the PhD dissertation is always discussed in view of its relevance by PhD students and his two supervisors and usually linked to national priorities, state programs (e.g. on fundamental or applied research). However, the university claims that the research ideas and suggestions of PhD student are crucial in the agreement process, and that the topic can be changed after agreement with both supervisors (e.g. based on the experimental data, or in the case of appearance

newly interesting results). The panel deemed this statement as sufficient evidence for the students' autonomy in the decision but still encourages the university to foster creativity and individual research aims of students.

2. Courses/Modules: Content, Policy and Implementation

Criterion 2.1 Learning outcomes of the PhD programme

Evidence:

- cf. Module handbook
- cf. Academic Policy

Preliminary assessment and analysis of the peers:
The panel deemed that the intended as well as achieved learning outcomes of the programmes are formulated in a clear and concrete way in most cases and correspond to the level 8 of the European Qualifications Frameworks for Life-long learning (EQF).

For the programme Biotechnology:

The level descriptors of the EQF define "Knowledge at the most advanced frontier of a field of work or study and at the interface between fields" as adequate for the PhD graduate, which the panel found fulfilled by the definition "know the basics and principles for the development of drugs, devices, and equipment for biotechnology research based on modern methods of screening, predicting the functions and structures of molecular marking, transgenesis, research in the field of nanobiotechnology". This statement is clear and subject-specific and valid for the international scientific community. Also the statement on the expected competencies reflects international requirement to a graduated Biotechnologist, saying "development of biological methods for the disposal of industrial waste and harmful substances, the creation of closed technologies, development methodologies and conduct biomonitoring, the solution of other problems related to the protection of the environment" is adequate to the descriptor of skills foreseen by the EQF, stating "the most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice". Based on the analysis of the theses presented to the panel, publications produced by the students during the programme and also on module contents the panel deemed the intended learning outcomes of the programme Biotechnology to be realistic and achievable. The expected competencies stated under "Synthesis" or "Evaluation" in the self-assessment report are very de-

tailed, but all in all also correspond to the due level of the EQF and are achievable within the programme design as presented to the panel.

For the programme Geobotany:

Also the skills defined for the programme Geobotany reflect the internationally required level of a specialist. For instance, such specifications as “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”, “solve problems in a complex and unpredictable situations”, “develop the capacity for self-directed learning for continuing professional development” correspond to the skill descriptor quoted above. As for knowledge, the panel found the “bases of fundamental sciences within the geobotany specialization” and also “nature, mechanisms and patterns of the vital processes of living organisms (microorganisms, plants and animals)” to be achievable within the given setting, since the structured form of the programme allowed for deepening the knowledge of fundamentals of related disciplines.

For the programme Biology:

The only programme where the learning outcomes were deemed to be too generic and partly not adequate to the expected level of the EQF is Biology. For instance, the panel has not found any subject-specific definition of the learning outcomes in the field of knowledge (the self-assessment report states “tendencies and urgent research directions in modern biology and corresponding research fields, methodology of science, achievements of world and domestic biological science and corresponding research fields, social responsibility in science and education, scientific terminology in native and foreign language for better scientific communication”).

Also the description of expected skills is rather generic and could be required of any graduate, not specifically of Biology: “The most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice”, “to organize, design and realize scientific researches”, “to analyze, evaluate and compare theories, conceptions and obtained scientific data to provide deep outcomes and conclusions critically assess chosen research direction, select appropriate methods and apply suitable research skills”.

The learning outcomes are the crucial tool in the internal as well as external quality assurance; they give the key stakeholders an idea of what courses are aiming at and what competence profile the graduate is supposed to achieve upon graduation. A generic and very broad definition of the learning outcomes is not only not helpful for the internal quality assessment and accreditation processes, but also intransparent for students and potential employers, so that the panel deems a more subject-specific definition of the

learning outcomes for Biology as absolutely necessary. The programme needs therefore considerable conceptual focusing. From the module handbook only very little interconnection between the EMPS with regard to key knowledge and skills imparted is not evident. Moreover, most of the EMPS are dealing with microbiology and molecular biology. Interconnections between Research Directions 701 to 704 and Research Directions 705 and 706 are missing in particular. Moreover, the programme title – Biology – is a bit misleading, it may rather be Microbiology/Molecular Biology. All in all, the programme is not to be characterized as very interdisciplinary compared to the international context, since it covers only very specific areas of biology. As for generic and overarching skills, the panel encourages to focus increasing the knowledge based and hypothesis-driven research, which is the added value a research university as to provide.

Moreover, the publication of the intended programme learning outcomes and their accessibility to all relevant stakeholders, especially teaching staff and students, play a crucial role for transparency and for quality-related reference by the stakeholders. The panel could not find any proof for the fact of publishing of learning outcomes as they have been presented to the panel. From the audit of Bachelor's and Master's programme of the same cluster, the panel acknowledged that the learning outcomes are published in the internal document-management system UNIVER. However, under these premises the prospective study candidates cannot access them, which is crucial for a thorough decision making and comparison of different programs. Therefore, the panel considered the publication of the learning outcomes for making them accessible to the public on the website of the university a necessity.

Criterion 2.2 Prospects of the labour market and practical orientation

Evidence:

- cf. statistics on graduates employment in terms of numbers and market sector
- Overview of companies for practical training
- Discussions with students/alumni

Preliminary assessment and analysis of the peers:

Due to the fact that there is only a very restricted number of PhD graduates, all graduates are employed in the shortest time after graduation. Additionally, the students confirmed that many of them are involved in the research projects of their supervisors or other teaching staff from the chairs offering the programme, so that early practical experience, sometimes even starting from the Bachelor's studies, is ensured. The students moreover confirmed that they never work fulltime which is a requirement by the university and the

grant provider in order to leave enough time for compilation of the PhD thesis and connected research work.

The panel considered a very positive tendency that PhD students are not only involved in research projects of their professors, allowing for additional research experience and additional funding during this time. Some of them also teach undergraduate students which gives them another opportunity for pedagogical practice. The panel deemed this to be positive for their further teaching activities.

In the self-assessment report for Biotechnology, the university provided a list with employers of previous cohorst which shows a good balance of research-oriented companies (e.g. KazAgroInnovation soecialized in breeding and reseatch, or Kazakhstan Scientific production Enterprise “Antigen”) and purely scientific institutions, such as the Institute of General Genetics and Cytology, run by the Ministry of Education and Sciences of Repubic of Kazakhstan or Nazarbaev University. The programme coordinator’s confirmed that they recruit new staff from the recent PhD graduates (cf. Also criterion 5.1 Staff). A similar situation is described in the self-assessment reports of Biology and Geobotany. The demand for students also from other universities is obvious, but the self-assessment report did not show neither analysis of the list presented, nor numbers (which tendency is in place for graduates dedicating themselves to the research after the PhD vs. respectively to the private business). The panel has not seen any proof of department-specific statistics showing details on employment (time without employment, full-time or part-time placements, placement by major/not by major etc.) and has obtained no clear statement from the HEI whether there are some department-specific quality assurance procedures at all. Even though for Biology, tables with columns “employment by major” and “employment in industry” have been included, they have not been filled in, so that the panel gained no clarity whether there is any kind of record of alummni’s employement. The panel therefore requires additional information on procedures of checking the employability for all programmes.

Another misleading information on the job prospective are the internships. The self-assessment reports state for Biology and Biotechnology a range of employers provided an internship, but there is no internship included in the curriculum. Moreover, the students confirmed that there were no internships foreseen by the programme design; there were merely those internships foreseen by the projects where students were involved in. Except in case of Geobotany, where internships are part of the curriculum, this information is misleading. The panel therefore requires a written statement on the internships, the duration, the location (in case of Geobotany), aims and also credit points foreseen in case there are any.

Criterion 2.3 Admission requirements

Evidence:

- Academic Policy
- Website: http://www.kaznu.kz/ru/13691/page/welcome///, as of 21.08.2014

Preliminary assessment and analysis of the peers:

The admission rules for the PhD programmes are clearly defined in the academic policy, based on the law developed by the Ministry of Education and Science of Kazakhstan based on the article number 4 of the law on Education (as of June 27, 2007). The admission decisions are made by the admission commission, including 3 university's professors nominated by Rector's decree.

Studying a PhD programme is only possible with a grant of the Republic of Kazakhstan, so no private funding is involved in financing the programmes yet. The university however additionally accepts PhD-students from other universities or selected by external Research institutes. The state grants are awarded based on the best results of admission exams, which are an extensive foreign language test (TOEFLITP, TOEFL, at least 560 points, DELF – B2 or DALF C1, Deutsche Sprachprüfung für den Hochschulzugang – C1) and the other being a programme based written exam which is focused on the chosen subject and envisaging two theoretical questions and one essay. A very good command of English shown by the students proves that the admission requirements are held up with. The tests are conducted by the National Testing Center. In cases where external research Institutes are seeking a qualified candidate for a special project, they might handle the general admission requirements, such as Foreign language command, but they admit students to the programme under the condition that they catch up with the required competence within an agreed period of time. The panel understands that in certain cases specialized profiles of Master's graduates and their professional experience can be rather decisive than the level of soft skills. However, in order to ensure equal treatment for all candidates, this information should be made transparent, since it could encourage some qualified graduates to submit their application to the programme. Further on, the period of time to catch up the lack of command of English language should be defined in advance – within first year of studies would be recommendable, since at latest for the stay abroad, sound knowledge of the English or any other foreign language is needed.

The admission criteria are rather of generic kind and they only assess a very general level of skills and knowledge. More programme-specific knowledge would be a more reliable prerequisite for admission. The panel understands that the university does not decide about the set up of the admission criteria; however, the panel points out this remark as a

point for further consideration and internal discussion. All in all, the admission regulations allow for a consistent selection of potentially successful study candidates, since not only solving theoretical problems but also the ability to clearly structure, formulate and conclude scientific texts is tested. Also, the thorough knowledge of the foreign language is an important prerequisite, given that PhD students are supposed to conduct research abroad, be able to read and synthesize technical literature, as well as communicate without any linguistic obstacles with their foreign supervisors. The panel found this to be the case for the students they met during the onsite visit.

Criterion 2.4 Contents

Evidence:

- Module Descriptions
- Curriculum
- Discussion with students
- Discussion with teaching staff

Preliminary assessment and analysis of the peers:

The panel has seen during the onsite visit that the contents of the PhD programmes are directly related to priority research fields of the Department for Biology and Biotechnology (cf. curriculum overviews), including such foci as Microbiology and Applied Microbiology, Genetics and Cell Biology, Genetical Engineering, Biochemistry, Biophysics and Biorhytmology; further on, the Ecology-related research is focusing on Plant Anatomy and Physiology, Human and Animal Physiology, Histology, Zoology, Hydrobiology and Ichtiology. The Department runs two internal research institutes: the Research Institutes on the problems of Biology and Biotechnology, which is dedicating itself to the applied research for medicine, agriculture and environmental protection (including bioremediation and waste usage) as well as biogeotechnology, as well as the Institute of problems of Ecology, uniting the research foci stated above in the ecological context (cf. also 5.2 Equipment).

The programmes under review are structured PhD programmes aiming at simultaneous development of academic fundamental knowledge of the studied disciplines, but also of related fields. The electives partly arose from the historical development of the programmes. The programmes have been offered since 2005; in the beginning, they were rather narrow specialized: molecular cellbiology, bioinformatics, biophysics, and microbiology. After 2011, when first governmental grants have been awarded, the programme content-wise foci have become broader: biotechnology, molecular genetics, biology of

microorganisms and food biotechnology are key trajectories to PhD students, out of which they can select their electives. The programme coordinators stressed the fact that interdisciplinarity increases the employability of students (fundamentals of Geography, Cadaster and Cartography, Industrial Botanics for Geobotany, mathematics for bioinformatics, etc.). Additionally to these interdisciplinary modules, there is also a continuous development of research skills reflected in the six research seminars.

The programme coordinators, as well as students, have confirmed that there is a considerable flexibility in the curriculum and also in the implementation itself, since the PhD courses show a very good student-teacher ratio and the courses are handled rather as individual tutorials than classroom teaching (cf. also criterion 3.1 Structure). By offering different electives and also possibilities of individual paths, the HEI uses its until now rather restricted but growing autonomy for designing the curriculum in future, which the panel found a laudable approach.

The option of selecting individual paths is already helpful, but a better option would be a range of targeted support modules for developing professional skills, e.g. by delivering enhanced modules/workshops on scientific writing or presenting in English. Possible modules could be in this case “Successful Presenting at Conferences” as well as “Successful publishing strategies”, or workshops for further development of teaching skills.

Referring hereto, the panel noticed that the module descriptions presented did not correspond to the findings of the onsite visit. The module titles insinuated a rather basic level of the taught disciplines adequate for Bachelor’s or Master’s, but not to PhD (e.g. “Population biology of plants”, “Vegetation of Kazakhstan and its protection” in Geobotany or “Molecular biotechnology of living organisms”, “Microorganisms and bioremediation” in Biotechnology), and in many cases, the module handbook was stating “Lecture” as type of teaching, which is not really corresponding to the needs of PhD students, who rather need discussion on most recent developments in the science than lecturing in teacher-centered format. However, after convincing discussions with teaching staff and students during the onsite visit and also theses on the expected level, the panel evaluated the programme contents as adequate for the due level.

However, the module handbooks should be revised and such rubrics as type of teaching should be checked whether they reflect the reality. Since there are also students studying in English, the English documentation of the programme should be revised for better transparency. Moreover, for the above mentioned research seminars which are foreseen for every semester the detailed module descriptions are missing. The panel was informed that these research seminars are targeted at general advice and exchange among the supervisors and students and that the contents of these session are very variable. This flexibility was considered absolutely positive and laudable, but it has to be reflected in the

description of the modules in order to have a joint point of reference not only for students, but also for teachers.

The electives in Geobotany listed in the core curriculum seem to be to too ambitious. The wide scale of topics bound a lot of time to the teaching staff as well as to the students, lacking for research. Some topics could be merged to one lecture, e.g. “Signalomics of higher plant” and “Biomorphology”, “Land registry” and “Geobotanic mapping” and, “Paleoecology” and “Paleobotany”, for example.

Also a clear description of internships is missing; in Geobotany, in the curriculum overview of the self-assessment report, 39 credits are foreseen for the internship (which must be a typo, it would mean more than a half of the workload of the whole programme), but no detailed module description for the internships is provided. The panel therefore requires an example of a detailed Geobotany curriculum in use which is also available to students.

As for other programmes, the self-assessment reports state companies offered an internship, but internships are mentioned neither in the curriculum nor in the module handbook. These descriptions are not least crucial for internal quality assurance (aligning the modules to the intended learning outcomes and regular checking the achievement). The research seminars are also not mentioned in the objectives matrix, and so that it remained unclear to the panel, how the objectives of these seminars are related to the learning outcomes of the programme. For this reason, the panel strongly emphasized the need to revise the module handbooks, by including the missing descriptions of research seminars, if applicable also of internships, in order to reflect this option of maximum individual customization in the current module descriptions.

Moreover, it is recommendable to stick to the output-oriented module description than to the input-oriented. For instance, the module handbook of the programme Biotechnology presents a list of topics to be handled in Microorganisms and Bioremediation, but these topics are very much focused on knowledge (e.g. “Reaction types of biotransformation of xenobiotics”, “The use of enzymes in the biotransformation of xenobiotics biotechnology”, “Advantages biotransformation prior chemical transformation”, “Microbiological transformation of organic compounds” etc.). Also for Biology and Geobotany, many module descriptions are rather oriented on input than to output (cf. “Actual problems of general and molecular genetics”, “Metabolism and its regulation” for Biology and “Grasslands studying” or “Paleobotany” for Geobotany). As for description of expected skills and competencies, they seem to be copy-pasted throughout the whole module handbook, so that no specific module objectives have been defined. The module description should contain a sound formulation of the module objectives, in line with the learning outcomes and programme objectives ensuring a sound and consistent programme

design. The module design should be rather focused on fostering of research method skills, e.g. trough discussion of unusual research design and new approaches to research methodology.

In summary, the current practice of documenting the modules needs to be revised: for every module, specific module objectives have to be defined, which are in line with the learning outcomes of the programme. There should be an update and completion the respective descriptions, thorough revision of other module description for ensuring consistency, revision of types of teaching in order to make them reflect the high level of individuality and customization. It is also necessary to decide what type of examination fits best for assessing the contents and the expected output of the modules (cf. also criterion 4).

The panel furthermore recommends to publish the module handbooks on the website (and not just in the internal system UNIVER) in order to make them accessible and usable as reliable reference for all relevant stakeholders – prospective students, employers, etc.

Final assessment of the peers after the comment of the Provider regarding criterion 2:

The university has not provided any statement on the publication of the learning outcomes, that is why the preliminary assessment of the peers concerning the subcriterion 2.2. is still valid. The learning outcomes must be published and available to all stakeholders (especially to students and staff).

The infrastructure for enabling an internship abroad twice a year for increasing the employability (subcriterion 2.4) as well as intercultural communication and working skills is deemed to be a very good practice.

Even though the module objectives have been partly updated and the missing statements on the examination forms have been included at least in case of the programme Biotechnology, the assessment of further points of the panel as presented above remain unchanged for all programmes.

3. Courses/Modules: Structures, Methods and Implementation

Criterion 3.1 Structure

Evidence:

- Curriculum
- Discussion with students

Preliminary assessment and analysis of the peers:

The curricula of all programmes contain a range of obligatory modules which are derived from the standards set by the ministry. While the core or compulsory modules cannot be changed by the university, the university has the autonomy to design elective modules, such as Specialized Compulsory Modules (15 Kazakh credits or 22.5 ECTS) and Modules of Individual Educational Path elective courses (18 Kazakh credits or 27 ECTS). Given that the curriculum includes six obligatory research seminars, credited with 28 Kazakh credits, so that the university has the autonomy to design a predominant part of the curriculum. The PhD select the elective disciplines being able to choose among of 3-4 different teachers - which proves a very good human resources base. The panel also learned that the form of the lectures and seminars is different from the way these are taught for Bachelor's and Master's students – it is rather a critical discussion of selected problems of the disciplines, discussion of additional most recent publications than typical lecturing. These classes take place in a within a very small circle: 1-2 students discussing with the professor, and under this conditions, the panel deemed the structured PhD programmes under review to be designed in a beneficial way for achieving the expected learning outcomes.
The mere reading of the curriculum might lead to the assumption that too much time is allocated to basic scientific courses which would not allow for research activities adequate for a PhD level. However, the students and teaching staff confirmed the statement of the programme coordinators that these modules do not exceed 25-30% of their working time in the overall duration of the programme, even if in the first year, especially in winter terms, there are rather many courses, whereas in the spring term, the Research Seminars are credited with unusually high number of Credit Points (Research Seminar II, IV and VI), which hints on the fact that the spring term is rather dedicated to research and compilation of the thesis (or also a visit of facilities of the foreign advisor) rather than to attaining academic fundamentals of related disciplines. The panel deemed this handling of structured academic programme to be a good and beneficial for the achievement of the learning outcomes.

For the completion of the PhD programme, two schedules play a crucial role – on the one hand, the presented curriculum which shows a thorough structure which allows for deepening scientific research foci, and, on the other hand, the individual research schedule which students agree on with their supervisors. This second schedule is to be agreed upon within three months after being accepted to the program under the support of a research adviser. This individual working plan must include the following: individual academic plan (choice of foci for modules), individual plan for research work, plan for research practical (implementation of experiments), a research proposal plan for the implementation of the dissertation, a plan for publishing and the internship abroad.

As far as the latter one is concerned, the panel deemed it to be an especially commendable practice to enable students to go abroad for visiting their second advisor every year for at least two months. Some students informed the panel that they are allowed to stay longer in cases they need it (e.g. the labs of the second institutions allow for special experiments which are not feasible at the local facilities) and that they can also "accumulate" this time to half a year and stay abroad for a longer time at once.

The strict structure of three years should, however, be revised. Especially for experimental thesis in Biotechnology concepts more flexibility should be possible, as a high level of uncertainty has to be handled when the concept of experiments might have to be redesigned several times and where the reliability of results possibly must increased by questioning and continuous further developing of the research methodology. The students considered it sometimes almost impossible to handle the strict rules particularly in the final phase of the programme. The students informed the panel on the possibility of taking the final exams in the autumn session instead of the regular defense in May, in order to obtain at least a short prolongation for finalizing the thesis. However, the panel recommended revising the strict maximum duration of three years, making an option of prolongation for one or two semesters possible in well-justified cases.

Moreover, as additional remark, the panel would suggest that the programme should be structured by additional presentation of results of the research to a bigger auditorium every six month as a practice before the defense of the thesis. These measures could be counted as seminars with the respective credit points. Such presentation could contain an evaluation of the results with regard for the original hypothesis and the outlook for the next six month period.

Criterion 3.2 Workload

Evidence:

- cf. curriculum
- Discussions with students

Preliminary assessment and analysis of the peers:

Although the Academic Policy limits the maximum PhD student's workload to 57 hours, which would normally be considered too high in international comparison, the students confirmed that they consider their workload as feasible and acceptable (apart from the cases mentioned above where experimental thesis concepts made the completion in time impossible). The presented curricula show a rather varying workload within the modules. The peers have not gained a clear picture from the Academic Policy as to how many electives the students are expected to take every semester so that the peers cannot fully grasp the amount of mandatory expected workload. The students, however, considered the modules offered as necessary and helpful. They highlighted this way of learning, in almost individual or often indeed individual classes as beneficial for their thesis.

Nevertheless, for transparency reasons, it is absolutely necessary to revise the workload-relevant parts of the Academic Policy. For instance, on the page 36 there are two different numbers stating the amount of hours foreseen for one Kazakh credit 15 and 3, which would result in a considerable difference in calculations. It is also not clear what ration has been used for conversion of Kazakh Credit Points to ECTS; in Biotechnology, the calculation is made consistently with a ration of 1,5, which is laudable. As for Biology and Geobotany, the conversion is done very differently: the curriculum of Biology states 3 KCP = 5 ECTS (a ratio of 1,66), 2 KCP = 3 ECTS (a ratio of 1,5), for Geobotany (where a sound curriculum overview has yet not been submitted) there are ratios of 1 KCP = 2 ECTS, 3 KCP = 5 ECTS or just 3 KCP = 3 ECTS. The panel was not able to gain final clarity on the planned workload, neither for students, nor for the teaching staff. For the final assessment, the panel therefore needs an thoroughly calculated overview of the credits for every programme with an explanation of calculation modalities, especially as far as electives are concerned.

Generally, the workload documentation is very intransparent. The documents must make more clear that only 25 – 30% of the student's time is devoted to taking modules. The work on the PhD-thesis must begin as early as possible for being to judge on the feasibility of working towards a hypothesis. Particularly theses based on extensive experimental and/or field work require an early beginning and ample time for laboratory work, and it has not become clear whether this procedure is possible and facilitated to the students.

Criterion 3.3 Teaching methodology

Evidence:

- cf. module descriptions

Preliminary assessment and analysis of the peers:

The University provides every student with two supervisors (so all PhD students are so called "sandwich-students"), one being a local supervisor and one a foreign full-time employed professor which the panel evaluated as very laudable and beneficial for the successful completion of the programme and achieving the learning outcomes.

During the audit, the panel became convincing statements on the didactic design of the modules, being not "lectures", as stated in the module handbooks, but rather problem-solving oriented seminar with very individual approach to students need. According to the interests of the small groups of students (since the intake allows for groups constisting of two or three students per teacher), most recent articles and papers from the respective field are discussed and analyzed jointly. Students prepare analytical reports or summaries of these articles which count into the intermediate control (cf. criterion 4 Examination). The fact that the advisors are directly responsible for student's work, such as performing all required workloads on time, annual results of students and also their publication activities is also considered by the panel to be an additional evidence for a highly service-oriented approach to supervising. The panel deemed the concept of optional guided self-study to be beneficial also on PhD level, since those were rather used as fixed hours in which students could contact the teaching staff with any concern on their thesis or their work generally. In the PhD studies, no practical lab work is conducted; all practical sessions stated in the self-assessment reports are such seminars as described above.

The policy on polylingualism is also very commendable – the panel was told that the PhD students compiling their work in Kazakh must publish a Russian version, and vice versa. Even though there is always an English abstract of the thesis, the panel deemed that the advisors should encourage the students to write their thesis or at least the PhD-relevant publications in English, in order to make the work results visible internationally.

The university's policy of very early involving the students into research activities and experimental work is very laudable. The PhD students confirmed that already undergraduate students are able to access research labs if they provide a good research design to the head of the respective chair.

A very individual approach to adapting modules' contents to the need of the group is adequate for a programme on a PhD level. Also studying and conducting research abroad is very beneficial for strengthening the ability of working in international settings. Further

enhancement could be achieved by handling the stays abroad more flexibly in cases where experimental work is conducted. Some students indicated that they plan to conduct certain experiments abroad, since the special equipment is only available at foreign supervisor's university. Therefore, many students often use the whole six months of funding for studies abroad at once, and in case, they would have to come back in order to repeat some experiments or re-design the originally planned ones, a more flexible schedule would be beneficial (cf. also criterion 3.1). The panel therefore suggested considering allocation of additional research time for well-justified cases where further experimental sessions abroad are needed in addition to the six months spent.

Criterion 3.4 Support and assistance

Evidence:

- Academic Policy
- Discussion with students

Preliminary assessment and analysis of the peers:

The peers deemed the support and advice infrastructure at the al-Farabi Kazakh State University to be especially well developed. By enabling an individual and customized approach to adapting the accompanying modules and also continuous support during the work on the thesis in the guided self-study sessions, the university provides a good setting for development of the skills and competences stated above (cf. 2.1 Learning outcomes). The students confirmed that in cases of problems, not only study-related but also private ones, advisors are always available for and ready to help. Especially the support and assistance provided by the foreign supervisor was considered very valuable since this connection not only allows for research and academic exchange in international setting, but also a strengthening of the language skills.

The students stated that their influence on the overall management of studies, especially their conceptual implementation, is rather low. The department of Biology has already quite strong initiatives of student-driven peer-to-peer support, but there are also groups dedicated to charity, social peer-to-peer support, cultural and leisure activities, which sets a good additional support framework. Student self-administration of this kind is rather an innovative phenomenon in the Kazakh academic setting.

The audit team acknowledged the option to change the supervisor if needed. For this purposes, the students confirmed that they were free to address the deans and that there were cases where a PhD supervisor's change had taken place.

Final assessment of the peers after the comment of the Provider regarding criterion 3:

The university has provided an extensive statement on the workload, which the panel found only partly helpful. The key statement is that the ECTS calculation is based on the conversion quotient of 1,5 related to the Kazakh credit points. Since the Kazakh credits points are based on the teachers workload, whereas the ECTS are always reflecting the students' workload, the panel sees a major discrepancy in the approach. The panel therefore deems that the conversion cannot be done just by multiplying the teacher's workload with any quotient and thus considers a revision of these policy a necessity for successful programme implementation.

The university did not provide any further statement on the recommendations of the peers as far as flexible prolongation of study period in case of unforeseen issues is concerned. The panel encourages to allow for more flexibility in cases where unexpected experimental research results impede the conclusion of the programme within the envisaged period or where student's work was accepted for publication but the review process provokes that he is not admitted to the final exam and defense. The panel further on encourages a thorough revision of the teaching practices and a considerable shortage of teaching and guided exercises in favour of seminars, case studies, field or theoretical work.

4. Examination: System, Policy and Forms

Criterion 4 Exams: System, policy and forms

Evidence:

- Academic Policy, p. 24 ff.
- Module Handbook
- discussion with student

Preliminary assessment and analysis of the peers:

The exam regulations are stipulated partly in the Academic Policy, but the detailed overview of the foreseen examination types is presented in the module handbook. The topics of exams are listed in the syllabi of the respective courses so that students can start preparing for exams in advance. It provides all in all a very good base for looking up expected contents and the exam topics foreseen.

There are intermediate exams comparable to the one applied in Master's degree programmes: the intermediate controls, taking place in the 7th and 15th week of every term,

consisted of validating the submitted homeworks and/or short tests on the relevant course content. Possible forms are additional written or oral testing, assessment of submitted summaries and analytical articles. The panel understands that the university needs to monitor the learning progress of the students; however, the pedagogical added value of interim exams as such on the PhD-level has however not become clear to the panel. PhD students already have a high level of independent learning behaviour, and these measures would rather just cause inflexibility and take time from the PhD research activities without really helping to keep up with the programme. Thorough monitoring of the students' workload should therefore take place.

Previous to taking the defense, the student must take a final written and oral exam on the mandatory courses from the curriculum. This procedure can be defined internally by every university.

The defense procedure is conducted as follows: every year, several Higher Education Institutions apply for the call for holding a "PhD committee in Physics", and the Ministry of Education and Science decides where the committee will convene. This committee is responsible for the defense procedure. Twelve professors from different fields and universities are selected in order to conduct the defense which is a mixed form of disputation and rigorosum. This committee compiles the final report on the thesis, in addition to the evaluation of the two evaluations by the supervisors. The last step is the approval of the decision by the Ministry. In seldom cases the last decision on the defense was negative. In case of subject-related reasons, there is the right to retake the PhD defense. In cases of proven plagiarism a retake is not possible.

The programme is concluded by the state exam not later than 3 months before the study programme is officially finished. The exam consists of practical and explanatory (i.e. theoretical) tasks and focuses on the command of methodology and analytical skills. The state exam commission is set up from professors and employer's representative. As an example of a typical question for the state exam, a question on toxicology was stated: the student is requested to describe the mechanisms of pollution as an answer to an application-oriented problem. For preparation of the exam interview the student has 45 minutes time. The mark awarded for the exam, the review of the thesis as well as the mark for the defense constitute the final grade of the student, which the panel deemed to be a good practice for ensuring a broad assessment of the level of knowledge, skills and competencies.

For the final examination mark, the results of the exam, the thesis and the defense are counted to the last state module which is to be taken not later than 3 months before the studies are finished. The exam commission is set up from professors and employer's representative.

Another issue on examinations forms arose from the discussion on the free choice option of exams. The programme coordinators as well as teachers and students confirmed that students were free to select any kind of examination form. Even if this approach could first seem student-friendly and modern, the panel deemed it to be too far from competence-oriented examination. For instance, student's free choice of examination does not contribute to the assessment of the intended ability to communicate on the results of the research in front of bigger audiences, which is an absolute necessity for any scholar and also to some extent expected in the learning outcomes, stating e.g. for Biotechnology "have the personal qualities and skills needed *for successful employment* and requiring initiative and personal responsibility" (for *successful employment* as a scholar/academic, solid communication and debating skills not only in front of professional but also of lay audiences is needed) or for instance Geobotany, where a sound command of "scientific terminology in native and foreign language for better scientific communication" is required but not systematically assessed. Certainly, given that the classes are rather held as colloquia with free discussions in very small groups, the communication with a specialized public in small settings is surely fostered. However, especially as preparation for the defense, additional practice of presenting in bigger settings, in front of bigger and mixed audiences, would be a helpful experience for young scholars. The university could think of evaluating the presentations held during student's conferences (or other conferences), and further encourage students to practice the ability of public speeches.

Therefore the examination form should be clearly defined in the module handbooks and syllabi and adjusted to the contents of the module. For instance, if the module is focusing on methodology, a practical task with a concrete problem to solve would be more appropriate than an oral exam checking only the theoretical knowledge. It is therefore a clear necessity to revise the policy of arbitrary examination form, and align the exams to the module objectives and contents. Further on, the interim testing methodology should be carefully reviewed in light of its necessity, suitability for assessing the intended learning outcomes and related risk of high workload. At least, it should be monitored constantly and changed when overload is detected.

Final assessment of the peers after the comment of the Provider regarding criterion 4:

Although the module handbook of Biotechnology now lists the examination forms and procedures, which also comply with the module objectives, the other programmes have not submitted any comment on this point, thus the assessment of the peers remains unchanged for Biology and Geobotany.

5. Resources

Criterion 5.1 Staff

Evidence:

- list of and information about research projects in the self-assessment report
- Staff Handbook
- Discussions with programme coordinators, teaching staff and students

Preliminary assessment and analysis of the peers:
The panel gained the impression of a very smooth management of the programme not only as far as the teaching activities are concerned, but also the availability of support and advice as well as the access to the relevant research equipment. Nevertheless, as every course is offered at the same time by three or four different professors in order to allow students the free choice of teacher and moreover, also in three languages (Russian, Kazakh and English), a vast number of teachers is needed in order to keep the programmes running with such small cohorts. The university has informed the panel about the fact that the grants allocated for every student allow for hiring additional staff and/or finding ways of reducing the workload foreseen for the administrative work or teaching Bachelor's students in cases where needed. Based on these findings, the panel preliminary recommends to think of further ways of fostering research activities of PhD advisors and PhD teaching staff, since a tight connection of research is absolutely necessary for good teaching on this demanding level. However, for the final assessment by the peers, an overview of typical weekly workload of a professor of the PhD programme is needed as an additional document, including the offer of the guided self-study sessions and all administrative duties connected to the educational activities.

Another point of further enhancement refers to scientific communication skills in English/foreign languages, which is not yet present in case of every teacher, but which will be needed for adequate teaching of PhD students, who need discussions of most recent findings of the respective disciplines. For this purpose, following the relevant publications and participation in international conferences by teaching staff is definitely fostering. Moreover, the international up-to-datedness of staff is needed for the long-term perspective of the strategic development of department if its leadership really envisages conducting research on international level.

As a general remark, the panel additionally points out that the transformation to a Research University is only possible by attracting outstanding students to the scientific activ-

ities, as well as early teaching. Attractive Post-doc programmes could be a helpful tool of sustainable staff development.

Criterion 5.2 Institutional setting, funding and equipment

Evidence:

- Overview of existing labs in the self-assessment report and on the website (cf. http://www.kaznu.kz/ru/4865/page/Departments/Faculty_of_Biology_and_BiotechnologyScientific-Research_Work_/Scientific_Laboratories)
- Visit of the institute's labs
- Discussion with students
- Discussion with teaching staff

Preliminary assessment and analysis of the peers:

The panel visited the teaching labs and also some examples of the research labs of the department. The panel preliminary evaluated the institutional setting, the funding situation as well as the equipment available at the campus to be between a sufficient and a rather good level for teaching purposes. The peers have not gained final clarity on the question of research equipment available at the external research laboratories, with which the university concluded cooperation agreements on joint use of research facilities. The facilities seem to be sufficient for the implementation of the programme based on the statements of teaching staff and students.

The students confirmed that they have all the equipment they need, and that it allows for implementation of planned experiments in the due time, even though the supply with needed chemicals is functioning very slowly, it can take up to six months until the re-ordered reagents are delivered to the university's laboratories. In these cases, the PhD students switch to external research institutes, where the supply chain works better. For correct assessment of the research setting, the panel however still needs a detailed overview of external laboratories and exact titles of the partnering research institutes.

The students further on confirmed that they already know during the set-up of the plan for their research activities, which additional equipment their foreign supervisor can provide, so that they adjust their work plan to logistics beforehand and judge this procedure as good and feasible. The panel valued examples of an experimental thesis partly conducted at the premises of up to three different universities in Kazakhstan and abroad. The panel came to the conclusion that the partnering with other institution, not least the co-operation with the foreign supervisors, assures a smooth run of the research work and is all in all a laudable approach to enabling research connected to usually very expensive and mostly very demanded equipment.

The lack of sufficient equipment is now balanced by cooperating with other faculties and with institutions of other universities and companies. However, this situation should be changed if the university strives for becoming a research university. KAZNU should produce a development plan for getting better equipped with instruments and technicians in favour of enhancing education and scientific progress from its own resources in the long-term development.

For field research work, especially relevant for Geobotany, there are also good solutions for funding: many PhD students dedicate their work to similar topics as their supervisors, so that they usually got to field research jointly, share the costs, which are covered from the department or reimbursed after the student has presented a bill on expenses (fuel, subsistence costs, etc.).

The students were also satisfied with the supply with scientific literature, especially with electronic resources. The institute's data base provides them any information they might need for the research. The full texts are accessible only a certain time, the librarians inform all the department stakeholder and they download the full texts in this time slot. Some e-journals are available from the chairs of the foreign supervisors, so that students feel well equipped with literature they need. In cases of individually needed sources of information, they can obtain additional funding for literature resources with an amount of $ 500 annually, paid in the time of the stay abroad of the student. Despite the above, and with the aim of not having to create provisional and individual solutions but being able offer all students and teaching staff a broad and good accessible base for research, the panel recommends further extending the English language resources.

Further on, the panel recommends to think of new ways for funding PhD places besides the state grant. Since the industry seemed to be very interested in such graduates, Kazakhstan could embark on implementing the international practice of involving the industry in funding such places. Such projects would fit well in the plans of Kazakhstan strategic plan for education, foreseeing commercialization of research products and results to the industry. Since many Kazakh companies, also those stated in the self-assessment reports, are working in the field of applied sciences, widening the permission for private funding of PhD placements would lead to mutual benefit for universities and industry. The panel acknowledges, however, that such a change does not depend on the university but on policy making instances.

Final assessment of the peers after the comment of the Provider regarding criterion 5:

The panel acknowledged the additionally submitted list of staff involved and of the respective workload and deems the staffing for adequate as far as quantity as well as qualification level are concerned. The university did not submit any additional comment on this point, so that the assessment of the panel remains unchanged.

6. Quality Management: Development and Enhancement

Criterion 6.1 Quality assurance & enhancement

Evidence:

- Academic Policy, p. 141 ff.
- Quality Management System presented
- description from the website: http://www.kaznu.kz/en/4828/page/About_Al-Farabi_Kazakh_National_University/Quality_management_system_Strategic_directions_of_QMS_development_/ (as of 25.08.2014)

Preliminary assessment and analysis of the peers:
The programme coordinators informed that panel that there is an ISO 9001 approach for management and administration processes implemented in the whole university since 2003 and being since then re-certified annually.

Concerning different elements of quality in teaching and learning, the university has in place several mechanisms: Firstly, the organizational setting with two supervisors, one from the faculty and one from abroad, aims at ensuring two independent perspectives and evaluation of the work done and therefore fulfills a key requirement for impartiality. Secondly, the continuous enhancement of the laboratories and search for further partnering with other research institutes, but also with other universities (such as Nazarbayev university or also regional Higher Education Institutions) is a good approach of ensuring an up-to-date academic setting. Thirdly, there is a pre-defined maximum ratio of three PhD-students per supervisor aiming at a close contact and thus quick discovery of problems. Fourthly, there are regular evaluations of the modules and also a specific teachers ranking. The results of this ranking are monitored and used for staff motivation (best teachers gain additional boni). The students indicated that they would turn to the head of the respective chairs, the dean, or even the Vice-rector for Academic Issues in case of major deficiencies, which proves that the open-door policy of the university is functioning well.

However, students are not much involved in any quality enhancement processes. For example, direct student's feedback could be collected also directly by the teacher, either in an open discussion or in a separate questionnaire, which would make it independent from individual discussions of motivated students. Students should also be regularly provided with feedback in what form their proposals have been taken into consideration. Nevertheless, a consistent policy at departments level with clearly defined aims, methods and responsibilities is not yet existent and should be developed, ensuring a consistent

closing of the feedback loops and further strengthening of the stakeholder involvement (cf. also 6.2). It should be well noted that the methodology chosen does not have to be very complex but should be clearly related to the set targets.

Criterion 6.2 Instruments, data and methods

Evidence:

- Self-assessment reports
- Discussion with programme coordinators and students

Preliminary assessment and analysis of the peers:

The self-assessment reports have not demonstrated that the department collects all relevant data; for instance, such data as job placement (differentiated by "employed by major/not by major) or publication activity of students and teacher are not present, or at least have not been presented to the panel. In the discussions, however, key questions of the panel on employability and demand for graduates were answered, partly even by teaching staff, which again proves that the supervisor-student relationship is very individual and that they stay in touch also after graduation. Personal contact is a very valuable approach to alumni relationship, but it does not replace a systematic statistics on alumni employability, which would record the placement also after retirement of relevant supervisors or lost contact with alumni. Alumni surveying is an especially valuable source of information for sustainable programme development, since they can make better judgments on practical relevance of the programmes of retrospective, the adequacy of the offered modules, also make some proposals on further development of the modules and further on provide additional career mentoring for the younger students.

With regard to the quality assurance instruments, students confirmed that they make use of completing the student's surveying tools, direct feedback to the teachers and/or the responsible person for modules for their further development. The panel has not seen such an example of a questionnaire, and therefore request one blank form as an additional document. The initiatives already in place at the university's level are good; the panel recommends to further broaden the instruments and methods used at the department's level. The faculty should conduct regular self assessments in a more detailed and clear way referring to relevant university data, such as qualification of staff, publication records, student numbers, graduates, alumni surveying etc.

Final assessment of the peers after the comment of the Provider regarding criterion 6:

The submitted questionnaires for employers and graduates are sufficient for the basic quality assessment and assurance, the panel however encourages to develop specialized

questionnaires for the programmes and not to use the standard questionnaire for assessing the adequacy of level and contents of the programme. A revised version of such questionnaire should encompass key competencies acquired in the course of studies, assessment of modules and their relevance, adequacy of teaching methods etc. The panel deems the criterion to be fulfilled but encourages further development and enhancement of the quality assurance system.

7. Documentation & Transparency

Criterion 7.1 Relevant documents

Evidence:

- Academic Policy as a whole
- Self-assessment reports

Preliminary assessment and analysis of the peers:
Most of regulations are transparently presented and clearly explained by the "University-wide Academic Policies and Procedures of al-Farabi Kazakh National University" (called here "Academic Policy"). This policy is available in Russian language on the website of al-Farabi-University to all interested parties.

The audit team considers the specific characteristics of the programmes to be adequately defined in the respective documents, especially the self-assessment reports and the module handbooks. The visibility of the programmes to third parties, such as prospective students or interested employers, is treated elsewhere in this report (cf. 1 Formal Information and 2.4 contents).

Criterion 7.2 Certificate upon conclusion

Evidence:

- Example of the leaving certificate

Preliminary assessment and analysis of the peers:
An example of the leaving certificate provided upon conclusion of the programme was not made available to the panel. Such a certificate should contain information on programme's structure, contents and level of the concluded programmes, as well as the learner's individual performance, the calculation of final mark including different weighting regulations for the separate modules.

Therefore the panel requests the submission of such certificate as additional document jointly with the comment of the university on this report. This document is needed for the final assessment of the programme.

Final assessment of the peers after the comment of the Provider regarding criterion 7:

The university has submitted an example of the leaving certificate (standardized diploma, partly in English language; no transcript of records was submitted, but in further ASIIN certification procedures, the university had submitted examples of transcripts available only in Russian and Kazakh languages). The certificates are issued by the Ministry of Education and Science upon conclusion of PhD programmes. The panel deemed the certificate to fulfill the requirements of the criterion 7.2. However, it would encourage to stay in a dialogue with the Ministry in order to facilitate the provision of the Certificate/Transcript additionally in English language also.

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 provider on the previous chapters of this report:

D 1. For PhD progarmme Geobotany: A detailed curriculum, a completed module handbook (including bibliography and detailed description of missing modules)

D 2. For all programmes: a list of external labs

D 3. For all programmes: Sound calculation of ECTS, stating the contact hours, the preparation for classes and also self-study, including electives and educational practice

D 4. For all programmes: Overview of teaching staff of the PhD programmes, including modules taught, preparation time, guided-self study and other obligations

D 5. For all programmes: Typical weekly workload of a teacher involved into implementation of PhD programmes

D 6. For all programmes: Statistics on employability of alumni of all PhD programmes

D 7. For all programmes: Overview of department-specific processes of quality assurance (brief description of aims, methods and examples of data collected)

D 8. For all programmes: Example of the leaving certificate for each programme

E Comment of the Provider (25.10.2014)

The institution provided a detailed statement as well as additional documents on all issues as stated under additional documents.

F Summary: Peer recommendations (04.11.2014)

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

PhD Programme	ASIIN Certificate	Maximum duration of certification
PhD Programme Biotechnology	awarded with requirements	11.11.2019
PhD Programme Biology	awarded with requirements	11.11.2019
PhD Programme Geobotany	awarded with requirements	11.11.2019

Requirements

For all PhD Programmes:

A 1 (ASIIN C Seal 2.1) It is absolutely necessary to revise the learning outcomes for the PhD Programme Biology in order to make the subject-specific profile and also the due level of the programme, reflecting the EQF Level 8 as defined in the descriptors.

A 2. (ASIIN C Seal 2.1) it is absolutely necessary to publish the learning outcomes for all PhD progarmmes on the university's website in order to make it accessible for prospective students, actual students as well as potential employers.

A 3 (ASIIN C Seal 2.4) It is absolutely necessary to revise module handbooks as follows: there should be clearly allocated module objectives, individually defined for every module but in line with the programme learning outcomes; module descriptions of research seminars and internships should be included; type of teaching should reflect the reality (in most cases it is a seminar rather than a lecture); a clear statement on the adequate examination form should be included.

A 4. (ASIIN C Seal 3.2) A clear and transparent calculation, based on students workload and not on teacher's workload, is absolutely necessary for due implementation of the programme and thorough monitoring of the workload.

A 5 (ASIIN C Seal 4) There must be a clearly defined examination form for every module, which corresponds to the module objectives and allows for their achievement (competence-oriented examination approach). The practice of interim testing should be carefully monitored in order to avoid student's overload without a considerable added value for their learning success.

Recommendations

For all programmes:

E 1. (ASIIN C Seal 1) It is recommended to publish the formal specifications of the programmes on the university's website in order to ensure transparency for stakeholders and potentials employers of the graduates.

E 2. (ASIIN C Seal 2.4) The panel recommends to include customized modules for further professional development of students, such as "Scientific writing in English", "Successful publication strategies" etc.

E 3. (ASIIN C Seal 2.4) The panel recommends to publish the module handbooks on the website of the respective programme in order to make it accessible to all interested parties.

E 4 (ASIIN C Seal 3.1) It is recommended to offer the option of flexible prolongation of programme period especially in cases of experimental research designs, where uncertainties in planning can occur which are not a student's fault.

E 5. (ASIIN C Seal 5.1) It is recommended to reduce administrative and teaching workload of PhD supervisors in order to allow for additional time for research.

E 6 (ASIIN C Seal 5.1) It is recommended to further foster the skills of scientific communication in English language for teaching staff.

E 7. (ASIIN C Seal 5.2) It is recommended to further develop the base of international literature resources.

G Decision of the Certification Committee (11.11.2014)

Assessment and analysis for the award of the ASIIN Certificate:

The Certification Committee discussed the procedure and the proposed requirements and recommendations. They noted that one of their tasks was to ensure consistency in the decision-making among the different certification procedures. Thus, they decided that some requirements and recommendations needed to be transferred, deleted or edited for each of the procedures.

In particular, they emphasized that the award of ECTS credit points was not mandatory for PhD programmes. However, if Al-Farabi University wishes to transfer its national Kazakh credit point system into ECTS, the calculation must be both consistent and in line with the ECTS Users' Guide. Additionally, the committee members considered it reasonable that credits would be awarded to the taught components, not for the research components or associated dissemination outputs.

The Committee also edited requirements 1 and 5 to make them more concise and deleted the last part of requirement 3.

The Certification Committee decides to award the ASIIN certificate as follows:

PhD Programme/Course/Module	ASIIN Certificate	Maximum duration of certification
PhD Programme Biotechnology	awarded with requirements	31.12.2019 (upon fulfillment of requirements)
PhD Programme Biology	awarded with requirements	31.12.2019 (upon fulfillment of requirements)
PhD Programme Geobotany	awarded with requirements	31.12.2019 (upon fulfillment of requirements)

Requirements

A 1. (ASIIN C Seal 2.1) The formulated objectives must correspond to the intended level 8 of the EQF for Biology.

A 2. (ASIIN C Seal 2.1) it is necessary to publish the learning outcomes for all PhD progarmmes on the university's website in order to make it accessible for prospective students, actual students as well as potential employers.

A 3. (ASIIN C Seal 2.4) It is necessary to revise module handbooks as follows: there should be clearly allocated module objectives, individually defined for every module but in line with the programme learning outcomes; module descriptions of research seminars and internships should be included;

A 4. (ASIIN C Seal 3.2) If ECTS credits are used, the transformation of the Kazakh credit points into ECTS must correspond to the ECTS regulations that one credit point is awarded for 25-30 hours student workload and be in line with the Users' Guide. ECTS should be applied for taught parts of the programmes only.

A 5. (ASIIN 4) The exam method must be determined by the staff member at the beginning of the semester and must be adequate to verify the achievement of the intended learning outcomes.

Recommendations

E 1. (ASIIN C Seal 1) It is recommended to publish the formal specifications of the programmes on the university's website in order to ensure transparency for stakeholders and potentials employers of the graduates.

E 2. (ASIIN 4) It is recommended to better equip the PhD students to use scientific work methods, including English, soft skills and scientific writing skills.

E 3. (ASIIN C Seal 3.1) It is recommended to offer flexible prolongation of programme period e.g. in cases of experimental research designs, where uncertainties in planning can occur which are not a student's fault.

E 4. (ASIIN C Seal 5.2) For the purpose of conducting research, the accessibility of relevant international journals, databases and literature must be improved and made transparent to all teaching staff and students.

E 5. (ASIIN 4) The practice of interim testing should be carefully monitored in order to avoid student's overload without a considerable added value for their learning success.