



# **ASIIN Certification Report**

**PhD Programmes**

***Cartography***

***Meteorology***

Provided by

**al-Farabi Kazakh National University**

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## A About the Certification Process

Title of the PhD Programme	Previous ASIIN certification
PhD in Cartography PhD in Meteorology	n/a
<p><b>Date of the contract:</b> 25<sup>th</sup> of December 2012</p> <p><b>Submission of the final version of the self-assessment report:</b> 17<sup>th</sup> of February 2014</p> <p><b>Date of the onsite visit:</b> 10<sup>th</sup> of July 2014</p> <p><b>at:</b> al-Farabi Kazakh National University, Almaty, Kazakhstan</p>	
<p><b>Peer panel:</b></p> <p>Dipl.-Ing. Heinrich Brüggemann (<i>business representative</i>, formerly Landesvermessungsamt NRW)</p> <p>Prof. Dr. Thomas Hauf (Leibniz-University Hannover)</p> <p>Prof. Dr. Wolfgang Huet (HFT Stuttgart)</p> <p>Alina Kim (<i>student representative</i>, East Kazakhstan State Technical University, Ust-Kamenogorsk)</p> <p>Prof. Dr. Wolfgang Niemeier (Technical University of Braunschweig)</p>	
<p><b>Representative of the ASIIN headquarter</b> Thorsten Zdebel</p>	
<p><b>Responsible decision-making committee:</b> Certification committee</p>	
<p><b>Criteria used:</b></p> <p>European Qualifications Framework for Lifelong Learning (<i>level 8</i>)</p> <p>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.</p> <p>European Standards and Guidelines as of 2009 (3<sup>rd</sup> edition).</p>	

## **A About the Certification Process**

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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 Programme

a) Name of the programme	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 in Cartography	Ph.D.	Full time	6 Semester 125 CP (ECTS, only course-work is credited)	Sep 2011, each year in September	3 students (planned)	
PhD in Meteorology	Ph.D.	Full time	6 Semester 125 CP (ECTS, only course-work is credited)	Sep 2011, each year in September	3 students (planned)	

For the PhD-Programme in Cartography the self-evaluation report states the following **intended learning outcomes**:

“The doctoral candidate of specialty 6D074100 - Cartography **should know**: the main trends of modern geography and cartography, theoretical and applied aspects of cartography, principles, methods, techniques, tools, forms the basis of scientific and applied activities at all stages of the formation of creative solutions: from the formulation laboratory and pilot studies to their implementation.

The doctoral candidate of specialty 6D074100 - Cartography **should have** representation on the history, current state and prospects of world cartography; history, implementation and program development of cartography in the Republic of Kazakhstan on the state and trends of the mapping and related branches of science and industry in the country and abroad, about the latest discoveries, developments and technologies that contribute to the progress of cartography, the achievements in the profile and the related fields of knowledge.

The doctoral candidate of specialty 6D074100 - Cartography **should have** skills: implementation of pilot studies and detailed mapping, reasoning, debate and persuasion in the preparation, editing, nomination and approval of the scientific and legislative documents relating to the development of cartography.

The doctoral candidate of specialty 6D074100 - Cartography **should** be competent: the formulation and implementation of research projects in cartography and related branches of fundamental and applied science, to conduct theoretical and experimental research in interpersonal and intercultural communication, collaboration in a team in the manifestation of leadership, initiative, and responsibility in professional work, constant updating of professional knowledge.

### **Analysis**

Doctor of engineering and technology should know: the theoretical and applied aspects of cartography, principles, methods, techniques, tools, form the basis of an application from the statement of laboratory and pilot studies prior to their technological implementation, ways of application of theoretical knowledge to solve applied problems of cartography and mapping industry, ways and methods of organization and development of cartographic production processes , methods of production of cartographic products; foundations of the system of quality control, organizational and legal foundations of management and production activities.

### **Synthesis**

Doctor of engineering and technology should have the skills of the pilot studies and the detailed map, process control cartographic production, risk assessment and identification of measures to ensure environmental and technological safety, developed processes the maps production regulating the organization and methods of cartography and surveying, cartographic production management, with small and medium businesses in cartography.

### **Assessment**

Doctor of engineering and technology should be able to: apply the theoretical knowledge and practical skills in applied research, production, in small and medium businesses, to simulate mapping systems and processes, the use of modern approaches and techniques to describe, analyze, theoretical and experimental studies of the natural systems work with research equipment , own upgrade system knowledge in the course of professional activity which provides an active search for and use new information.

The following **curriculum** is presented:

Module Code	Module Name	Module weight	Discipline Code	Discipline	ECTS /hours units	Credits	L+P+Lb	L+P+Lb	L+P+Lb	L+P+Lb	L+P+Lb	L+P+Lb
							semesters					
<i>Compulsory State Modules – 3 credits = 5 ECTS</i>												
<b>OGM 1</b>	<b>Compulsory State Module 1</b>	<b>3</b>	<b>NIK 7201</b>	Scientific informatics in cartography	5/135	3	1+2+0					
<i>Compulsory Professional Modules - 18 credits – 30 ECTS</i>												
OPM 1	Ecological mapping 1	3	EKNGI 7202	Ecological mapping in scientific studies of geographical	3/90	2	1+2+0					
OPM 2	Environmental - Agrolandscape Mapping	3	EAKRGT 7203	Environmental - Agrolandscape Mapping the Plains and Mountain Territories	5/135	3	1+2+0					
OPM 3	Satellite Images	3	KOKS 7204	Computer Processing of Satellite	5/135	3		1+2+0				
OPM 4	Stereoscopic model	3	CMM 7205	Stereoscopic model 4	5/135	3		1+2+0				
OPM 5	The Cartography and Geodesy Production	3	<b>SOKGP7206</b>	Modern base of the cartography and geodesy production	5/135	3		1+2+0				
<i>Modules of Individual Educational Paths – 18 credits = 30 ECTS</i>												
MIOT 1	Module of Individual Educational Path 1	6	8301	Electives	5/135	3		2				
			8302	Electives	5/135	3		2				
MIOT 2	Module of Individual	6	8303	Electives	5/135	3		2				

## B Characteristics of the PhD Programme

	Educational Path 2		8304	Electives	5/135	3		2					
MIOT 3	Module of Individual Educational Path 3	6	8305	Electives	5/135	3			3				
			8306	Electives	5/135	3			3				
				Total: Theoretical Training - 36 credits (60 ECTS)		36	9	9	9	9	0	0	
<i>Additional Types of Training 13 credits = 22 ECTS</i>													
Module Code	Module Name	Module weight	Module Component Code	Module Component Name	ECTS /hours units	Credits	I	II	III	IV			
NIRD	Doctoral Student's Research Work and Fullfilment of Dissertat-ion	28	NIRD I	Research Seminar I	1, 6/45	1	1						
			NIRD II	Research Seminar II	12/360	1(+3+4)		1(+3+4)					
			NIRD III	Research Seminar III	1, 6/45	1			1				
			NIRD IV	Research Seminar IV	12/360	1(+3+4)				1(+3+4)			
			NIRD V	Research Seminar V	1, 6/45	1						1	
			NIRD VI	Research Seminar VI	15/405	1(+8)							1(+8)
PP	Profes-sional In-ternship	6	PP	Pedagogical Internship	5/135	3			3				
			IP	Research internship	5/135	3(2+1)		2		1			
				Total: Additional Types of Training: 34 credits (57 ECTS)		34	1	3(+3+4)	4	2(+3+4)	1	1(+8)	
<i>Final Attestation 5 credits = 8 ECTS</i>													
FSA	Final Attestation	5	KE	Complex Examination (1 credit)	1, 6/45	1				1			
			ZD	Dissertation Fullfilment and Defence (4 credits)	6/180	4				3			
				<b>Grand Total: 75 credits (125 ECTS)</b>		75	22 (+7)		24(+7)		7(+8)		



## B Characteristics of the PhD Programme

Module code	Module name	Discipline code	Discipline name	ECTS /hours units	Semester	Prerequisites
MIOT 1	Automated Cartography	UDGS 8301	Data management in geographic	5/135	3	CRTG 5106 Mapping the territory of the natural and archaeological sites
		ATPPK8302	Automation of Technological Processes and Production in Cartography	5/135	3	CRTG 3305-Fundamentals of Inventory
MIOT 2	Interpretation of Satellite	KOKS 8303	Computer Processing of satellite	5/135	3	MAS 3003 Methods of aerospace shooting
		SNK8304	Digital Maps in Navigation	5/135	4	MAS 3003 Methods of aerospace shooting
MIOT 3	Copyright in Cartography	APK 8305	Copyright in cartography	5/135	4	CRTG 5105 Simulation in modern cartography
		NPA RK8306	Normative Legal Acts of Kazakhstan in The Field of Cartography	5/135	4	CRTG 5105 Simulation in modern cartography

Module code	Module name	Discipline code	Discipline name	ECTS /hours units	Semester	Prerequisites
MIOT 1	The ecological mapping of territories of the economic mastering is in arid terms	EKTDUS 8301	Ecological Mapping of Territories on Hydrocarbon Production	5/135	3	EMM3017 Environmental maps and mapping
		EKTGO8302	Ecological Mapping of Territories of The Mining Mastering	5/135	3	EMM3017 Environmental maps and mapping
MIOT 2	Ecological and geomorphological mapping of the territory of Kazakhstan	EGKPR 8303	Ecological and Geomorphological Mapping of the Platform Plains	5/135	3	GMPM3016 Geomorphological mapping of the plains and mountain areas
		EGKGT 8304	Ecological and Geomorphological Mapping of Mountain Areas	5/135	4	GMPM3016 Geomorphological mapping of the plains and mountain areas
MIOT 3	Ecological mapping of socio - economic geomorphology	EPUTK 8305	Ecological Problems of the Urbanized Territories and Their Mapping	5/135	4	GMPM3016 UGMG Urbano geography and municipal GIS
		EPSZKK8306	Ecological Problems of Residential Zones of Kazakhstan and Their Mapping	5/135	4	GMPM3016 Geomorphological mapping of the plains and mountain areas

For the PhD-Programme in Meteorology the self-evaluation report states the following **intended learning outcomes**:

**Goal:**

- being trained in a system of knowledge and critical evaluation of modern problems of meteorology;
- methods which train complex understanding used in meteorology;
- ability to carry out independent scientific research and competence of a formulation of the own conclusions;

**Goal:**

- skills of high level of work with primary and secondary sources and their analysis;
- ability competently to choose and apply various methodological approaches and new technologies;
- ability to make a contribution to development of the latest directions to meteorology at the expense of original scientific researches;

**Goal:**

- ability to develop, conceptualize and introduce projects for creation of the new knowledge having essential scientific value in meteorology;
- education of the modern highly qualified specialist in the specialty.

**Knowledge**

1. Knowledge of theoretical bases of aerodynamics and influence of meteorological conditions on aircraft characteristics; studying of ways of receiving these indicators with necessary and sufficient degree of accuracy, their comparison in time and on the territory.
2. Studying of the principles of construction and functioning of a control system of the organization in the conditions of the market; forecast of the most probable directions of processes of further development
3. To study problems of climatological processing of meteorological supervision, a general characteristic of these meteorological observations and techniques of their processing. influences of weather conditions on the aircraft at different stages of flight
4. To develop ability and skills of the analysis of rules of law at students, from scientific positions to estimate and explain tendencies of legal regulation of environmental protection and rational environmental management, to apply the received knowledge in practical life.

5. Studying of conditions causing climate over the territory of Kazakhstan, feature of circulation of the atmosphere; studying of repeatability of processes and the phenomena occurring over the Republic of Kazakhstan and the region as a whole.

### **Understanding**

1. Understanding of winter and summer circulation in a stratosphere, intensity of circulation; application of system approach at an assessment of level of technogenic pollution of the atmosphere;

2. Understand knowledge of results of action of cross-border transfer on climate change; methods of representation of function of usefulness function of prizes and losses – in different branches of economy

3. Possession of information technologies for the solution of problems of climatology, the analysis and a weather forecast and other meteorological directions

4. Studying of opportunities of creation of GIS on the basis of close integration with expert systems.

5. understanding of the main processes in the Northern hemisphere connected with the barichesky centers

### **Application**

1. Ability to carry out the analysis of primary experimental data; to use methods of statistical processing and the analysis of available information; main concepts of the ecological right, its system and sources;

2. To participate in the international cooperation concerning improvement of meteorological support of civil aviation within the Commission on aviation meteorology of VMO, Interstate council on hydrometeorology of the countries – participants of the CIS.

3. Preparation of basic data for creation of geoinformation cards in the Surfer program.

4. Forms of atmospheric circulation of Katz, their characteristic. Geographical provision of the main high-rise crests and hollows. Features of distribution of air temperature and precipitation

5. Methods of the forecast of showers, thunder-storms, hail. Calculation of parameters of the thermal, free and compelled convection; Implementation of regional programs within the Convention on cross-border air pollution

### **Analysis**

1. The comparative analysis of critical speeds of the wind causing the maximum concentration of harmful substances, in a ground layer of air from single sources of emission
2. To know the organization of metrological control and checking of measuring instruments, to exercise control of operation of meteorological means of supervision.
3. The comparative analysis of critical speeds of the wind causing the maximum concentration of harmful substances, in a ground layer of air from single sources of emission
4. To apply the received knowledge when studying current legislation in the field of protection of surrounding environment and rational environmental management;
5. To acquire knowledge, skills of preparation of adoption of marketing decisions at the level of the strategic directions of development;

### **Synthesis**

1. To provide deep assimilation by students of essence and the maintenance of institutes of the ecological right, its main categories and concepts;
2. to acquire knowledge, skills of preparation of adoption of marketing decisions at the level of the strategic directions of development;
3. Statistical estimates of general parameters; interval estimates. Dot estimates; concept of a solvency, not shift and efficiency; Basic provisions of the correlation analysis. Assessment of the importance of coefficient of correlation.
4. To determine the sizes of a sanitary protection zone and an influence zone for sources of emission of polluting substances; Assessment of ground concentration of harmful substances at a dangerous speed of a wind; Complex assessment of quality of the atmosphere of the industrial enterprise and city
5. Basic provisions of the correlation analysis. Assessment of the importance of coefficient of correlation; Statistical estimates of general parameters; interval estimates. Dot estimates; concept of a solvency, not shift and efficiency; Assessment of the importance of coefficients of regression; assessment of the importance of the equation of regression as a whole.

### **Evaluation**

1. To receive data on the typical aviation incidents connected with conditions of weather; to study the natural phenomena promoting emergence of plane crashes; To have idea of ways of processing and submission of meteorological information in the CIS and abroad; studying of modern systems of transfer, collecting and information storage;

2. Definition of maximum-permissible emissions of harmful substances from burning of various fuel at adverse weather condition; To define emissions of polluting substances by motor transport; Definition of category of danger of the enterprise depending on weight and specific structure of harmful emissions.
3. To master the main methods, equipment and technology of management; to create scientific outlook, high moral qualities and professionalism of the students, necessary for them in practical activities; to acquire knowledge, skills of preparation of adoption of marketing decisions at the level of the strategic directions of development; solution of questions of the organization, planning and control of marketing activity.
4. Digitization of raster cards; creation and editing of other types of net cards; creation of frame cards; creation and editing of other types of net cards; creation of frame cards
5. Definition of maximum-permissible emissions of harmful substances from burning of various fuel at adverse weather conditions; To define emissions of polluting substances by motor transport; Definition of category of danger of the enterprise depending on weight and specific structure of harmful emissions.

## B Characteristics of the PhD Programme

The following **curriculum** is presented<sup>1</sup>:

Title of module	Code of discipline	Title of subjects (modules) and type of activity	Number of credits	ECTS/ hours	L/P/L	Se m.
<b>Semester 1</b>						
<b>Compulsory State Module (3 credits - 5 ECTS)</b>	7201	Climate dynamics	3	5/135	2+1+0	1
Elective Module of Professional Specialization (6 credits - 10 ECTS)	<b>6D061201- Theoretical and applied aspects of meteorology</b>					
	7202	Eco-climatic potential of Kazakhstan	3	5/135	2+1+0	1
	7203	Transboundary transport of pollutants over Kazakhstan	3	5/135	2+1+0	1
	<b>6D061202-Scientific bases of water use</b>					
	7202	Stochastic models in hydrology	3	5/135	2+1+0	1
	7203	Transboundary transport of pollutants over Kazakhstan	3	5/135	2+1+0	1
Doctoral Student's Research Work and Fullfilment of Dissertation (2 credits - 3 ECTS)	NIRD I	Research Seminar I	2	3	2	1
<b>Semester 2</b>						
Elective Module of Professional Specialization (9 credits - 15 ECTS)	<b>6D061201- Theoretical and applied aspects of meteorology</b>					
	7204	Current methodologies weather	3	5/135	2+1+0	2
	7205	Modern numerical hydrodynamic methods and weather	3	5/135	2+1+0	2
	7206	Climate and Sustainable Development in Kazakhstan	3	5/135	2+1+0	2
	<b>6D061202-Scientific bases of water use</b>					
	7204	Methodological and applied aspects of the modern theory of channel processes	3	5/135	2+1+0	2
	7205	Hydromorphological processes in estuaries	3	5/135	2+1+0	2
	7206	Physical modeling of hydraulic phenomena	3	5/135	2+1+0	2
	Doctoral Student's Research Work and Fullfilment of Dissertation (4 credits – 7ECTS)	NIRD II	Research Seminar II	4	7	2(+2)
Professional	RP	Research practice	2	3	2	2

<sup>1</sup> The curriculum presented here has been submitted by the university on 25.08.2014 and replaces the one originally submitted and included in this report.

**B Characteristics of the PhD Programme**

Practice (2 credits – 3ECTS)						
<b>Semester 3</b>						
Module of Individual Educational Path (9 credits - 15 ECTS)	<b>6D061201- Theoretical and applied aspects of meteorology</b>					
	8301	Global climate change and hazardous meteorological processes	3	5/135	2+1+0	3
	8302	Current climate and characteristics of the general circulation of the atmosphere	3	5/135	2+1+0	3
	8303	Natural changes and anthropogenic transformation of water	3	5/135	2+1+0	3
	<b>6D061202-Scientific bases of water use</b>					
	8301	Planning and management of water systems of Republic of Kazakhstan	3	5/135	2+1+0	3
	8302	Methods to ensure safety of hydro ecological territories	3	5/135	2+1+0	3
	8303	Nature challenges and anthropogenic transformation of water resources	3	5/135	2+1+0	3
	Doctoral Student's Research Work and Fullfilment of Dissertation (2 credits - 3 ECTS)	NIRD III	Research Seminar III	2	3	2
Professional Practice (3 credits - 5 ECTS)	PP	Pedagogical Practice	3	5	3	3
<b>Semester 4</b>						
Module of Individual Educational Path (9 credits - 15 ECTS)	<b>6D061201- Theoretical and applied aspects of meteorology</b>					
	8304	Hydrological and ecological problems of Kazakhstan	3	5/135	2+1+0	4
	8305	Development of methods for analyzing and forecasting in meteorology	3	5/135	2+1+0	4
	8306	Atmospheric general circulation model	3	5/135	2+1+0	4
	<b>6D061202-Scientific bases of water use</b>					
	8304	Modern methods of assessment of erosion and accounting sediment runoff	3	5/135	2+1+0	4
	8305	Current quality of water environment	3	5/135	2+1+0	4
	8306	Current methods for monitoring the transboundary rivers	3	5/135	2+1+0	4
	Doctoral Student's Research Work and Fullfilment of	NIRD IV	Research Seminar IV	7	12	2(+2+3)

## B Characteristics of the PhD Programme

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Dissertation (7 credits - 11 ECTS)						
Professional Practice (1 credits – 2ECTS)	RP	Research practice	1	2	1	4
<b>Semester 5</b>						
Doctoral Student's Research Work and Fullfilment of Dissertation (2 credits - 3 ECTS)	NIRD V	Research Seminar V	2	3	2	5
<b>Semester 6</b>						
Doctoral Student's Research Work and Fullfilment of Dissertation (11 credits - 18 ECTS)	NIRD VI	Research Seminar VI	11	18	2(+6+3)	6
Final Attestation (5 credits - 8 ECTS)	CE	Complex Examination	1	2	1	6
	DFD	Dissertation Fullfilment and Defence	4	7	4	6



## C Peer Report for the ASIIN Certificate

### 1. Formal Information

<b>Criterion 1.1 Formal Information</b>
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**Evidence:**

- Self-Evaluation-Report
- Auxiliary document: “University-wide Academic Policies and Procedures of al-Farabi Kazakh National University”

**Preliminary assessment and analysis of the peers:**

The formal specifications of the programme are presented in the Self-Evaluation-Report. The audit team confirms that the names of both PhD-programmes (“Cartography” and “Meteorology”) reflect their contents properly.

The formal structure of the programmes is in line with the state requirements for PhD-programmes in Kazakhstan. Upon completion, students are awarded with a PhD-degree. The programme requires full-time involvement of students and extends over a period of three years. Not all time spent within these three years is credited. Participants are awarded with 75 Kazakh credits, which are reported to equal 125 credit-points ECTS. These credits only refer to the subsidiary modules provided by the curriculum. The audit team understands perfectly that the individual independent research work of participants, which is ought to be the central part of the programme, cannot be credited with ECTS.

Concerning student admission, both programmes are planned for an intake of three students per year. At present, the programme has no students enrolled. This has to be understood in the framework of the quite newly introduced 3<sup>rd</sup> cycle in Kazakhstan: The Kazakh ministry of Education and Science has granted the faculty with the license to conduct the PhD-programmes but then did not allocate student grants, which are awarded to students in a competitive procedure to cover the amount of money equal to study fees. It is not unusual to recognize licensed programmes without student grants – this could be recognized in other faculties as well. The Faculty of Geography and Environmental Sciences reports to expect grants for the next round because then, a sufficient number of masters’ students interested in and qualified for the PhD-programmes is about to finish their second cycle studies. The audit team strongly supports the faculty in providing an opportunity for further academic development to their best graduates.

The audit team considers the formal specifications of the programme to be adequately defined. This information is published on the websites of al-Farabi Kazakh National University and in its “Academic Policy” (which is also available on the websites of the university).

#### Criterion 1.2 Legal relationship: mutual rights and duties

**Evidence:**

- Discussions with faculty members responsible for programme implementation
- Auxiliary document: “University-wide Academic Policies and Procedures of al-Farabi Kazakh National University”

**Preliminary assessment and analysis of the peers:**

PhD-Students are enrolled just as students at bachelor’s and master’s level and share the same rights and obligations as students in the first and second cycle do. In principle the methods of financing studies (*state grants* allocated by the Kazakh Ministry of Education and Science) are working similar (see chapter 1.1). Additionally, PhD-students can be engaged in the educational work of their supervisors to enhance their income. If the completion of the dissertation exceeds the standard-period of the programmes, the faculty reports that students will not be charged by the university anymore, but have to live on their own funds.

Overall the audit team confirms that the legal status of PhD-students is defined properly.

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

The peers take into account the additional information of the university confirming that the ECTS credits of the PhD programme Meteorology correspond to 75 US or Kazak credits. They also acknowledge that an updated curriculum for this programme has been submitted. No changes to the peers’ assessment of criterion 1 result from this additional information. The peers consider it to be fulfilled.

## 2. Courses/Modules: Content, Policy and Implementation

#### Criterion 2.1 Learning outcomes

**Evidence:**

- Self-Evaluation-Report
- Discussions with the responsible members of university management

- Discussions with staff responsible for managing the study programmes
- Defined programme objectives and learning outcomes in the Self-Evaluation-Report

**Preliminary assessment and analysis of the peers:**

Kazakhstan is introducing the PhD-cycle following the implementation of the three-cycled bologna structure. This means that PhD-programmes are still in a nascent stage. One major stakeholder defining the overall structure of the study programmes in general and particularly of the PhD-programmes is the Kazakh Ministry for Education and Science. This counts especially for the duration of PhD-programmes and the number of courses within these programmes. The discussion with faculty staff in charge reveals that in this framework given, the faculty can develop their subjects autonomously. This structure came clear in the discussions with staff responsible for the PhD-programmes.

Both audit-team and faculty-staff agree that the most important learning outcome of the programme is the competence of PhD-graduates to conduct independent scientific research competitive at an international level. As suitable generic assessment criteria, the highest level 8 of the European Qualifications Framework (EQF) is applied. This level defines that students acquire *knowledge at the most advanced frontier of a field of work or study and at the interface between fields, achieve the most advanced and specialized 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*. They are intended to be able to *demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research*. This means that in terms of learning outcomes, the programme cannot be considered like a study programme with a thoroughly defined content.

Although the formulation of the programme objectives, as presented ahead, could catch up with the superlatives of the EQF level 8 (“most advanced”) to stress the visible research-oriented objectives (which have been stressed in the sessions with members from the rectorate and the faculty management), the audit team perceives both programmes to have clear objectives with regards to the future adoption of the European Qualifications Framework. For the Cartography programme, graduates should be *competent in the formulation and implementation of research projects in cartography and related branches of fundamental and applied science, to conduct theoretical and experimental research, in interpersonal and intercultural communication, collaboration in a team in the manifestation of leadership, initiative, and responsibility in professional work, constant updating of professional knowledge*. In case of Meteorology, the PhD-programme defines the *abilities*

*to carry out independent scientific research and competence of a formulation of the own conclusions, to work with primary and secondary sources and their analysis, to choose and apply various competently methodological approaches and new technologies, to contribute to the development of the latest directions to meteorology at the expense of original scientific researches and to develop, conceptualize and introduce projects for creation of the new knowledge having essential scientific value in meteorology.* Essential features of EQF level 8 are visible in the programme (e.g. *demonstrating substantial authority* by required presentations on international conferences and publications with impact-factor).

In the framework of the intended programme outcomes, the research performance of the faculty and of cooperating non-university institutes in the respective fields is to be seen as a prerequisite for successful independent international research projects of PhD-students. It defines the reservoir of possible supervisors and the diversity of possible topics. One condition unfavorable but difficult to challenge is that *funding of research* in Kazakhstan is predominantly carried out by the government or by companies without having an institution independent from the governmental routines and closely related to the intrinsic values of science. The peers suspected research to be carried out mostly as mission oriented research stipulated by the Kazakh government. But the faculty could reason and explain the scope of autonomy in the definition of research topics, thus convincing the audit team to have sufficient autonomy in the definition of research topics.

In case of the Cartography programme, research performance in cooperation between the faculty and the non-university *Institute of Geography* is seen as adequate. This also counts for the required equipment. Nevertheless, with a scope on *international research*, the audit team encourages the faculty to intensify contacts to international scientific associations and to participate in most actual research topics to acquire funding, utilizing the already established and beneficial cooperation. In case of the Meteorology programme, research performance of the respective department is focused on *climate research*. Without doubting the importance of climate research and its active continuation, this focus was also perceived as a comprehensible strategy to cope with deficient research equipment (because scientific data on climate change is quite accessible). What would be required as a prerequisite for broadening the scope of research, as encouraged by the audit team, is equipment comparable to e.g. *remote sensing equipment for local uses* (also mentioned in chapter 5.2).

The individual research work of PhD-students is supplemented by specific modules, which are adaptable to the specific needs of PhD-students theses (explained in chapter 2.4).

### Criterion 2.2 Prospects of the labour market and practical orientation

**Evidence:**

- Discussion with responsible staff from the faculty
- List of companies functioning as possible employers

**Preliminary assessment and analysis of the peers:**

At the time of the audit, no students have been enrolled in the programme yet because of the non-availability of state grants (Chapter 1.1). Although other career paths are possible, the main purpose of the PhD-programme is to raise young scientists as prospective scientific staff for the faculty's own human resource needs and for non-university research institutions and companies in the respective fields. The goal is to raise specialists capable of combining research and educational skills at the highest level possible. The audit team had the possibility to visit three non-university institutions in the respective subjects – two non-university institutes (*Institute of Geography, Almaty* and the *National Center of Space Research and Technologies, Almaty*) and one state company providing meteorological services (*Kazhydromet*). This is a choice of institutions where PhD-graduates can find leading positions as employees and where good possibilities can be found for joint research projects.

Considering the – by means of selection procedures - elite status of the PhD-programme, the audit team considers the careers opportunities to be given.

### Criterion 2.3 Admission requirements

**Evidence:**

- Auxiliary document: “University-wide Academic Policies and Procedures of al-Farabi Kazakh National University”
- Discussion with responsible staff from the faculty

**Preliminary assessment and analysis of the peers:**

The application to an announced PhD-position is open to interested masters' graduates from whole Kazakhstan and abroad. Places in the PhD-programmes are very limited. Irrespective of the question if the government allocates state grants or not, the programme offers three places.

In comparison to selection procedures in the first cycle, generic competences (especially the command of English as a scientific language) are tested likewise, but the procedure at PhD-level heavily depends on subject-specific examinations in the respective fields of cartography, respective meteorology, conducted by the University's Admission Commission,

to which staff from the respective departments is appointed to. This procedure is very important to the faculty because of the challenging publication requirements of the PhD-programmes: Having a paper published in a refereed journal with impact factor is a prerequisite for defending the final thesis. Because of publishing companies usually needing up to nine months for the review process, it can be challenging in terms of time to meet those requirements. This means the faculty is very keen to look for masters' students who have already begun substantial research work, which is likely to be successfully pursued.

Altogether, the selection procedure conducted for PhD-students admission clearly "ensure that all admitted learners fulfill the necessary requirements" as stated explicitly in the criteria. The overall procedure is explained in the "University-wide policy", which is accessible on the university's website. The audit therefore confirms that the respective criteria are perfectly met.

#### Criterion 2.4 Contents

**Evidence:**

- Self-Evaluation-Report
- Module descriptions

**Preliminary assessment and analysis of the peers:**

As mentioned before, the overall structure of the programme depends on state requirements, but the faculty can define the details autonomously. In the discussions it was perfectly clarified that the core of the programme consists of the individual independent research work conducted by PhD-students. The module descriptions provided together with the Self-Evaluation-Report only refer to supplementary parts of the PhD-programme. Within this framework, the faculty has chosen to define topics which are adaptable to the individual research work of PhD-students as well as to competences required for the human resource needs of the faculty itself. Upon entrance into the PhD-programme, every student creates his own trajectory of studies in cooperation with his supervisor.

These courses take place even with three students or less. Staff responsible for programme management could convincingly reason, that courses in this setting have a seminary character.

The curriculum of the Cartography programme consists of a *compulsory state module* in "Scientific informatics in Cartography", *compulsory professional modules* and *elective modules* in the areas of "Geoinformation and Digital Mapping" as well as "Environmental Mapping". Furthermore, there are "Research Seminars", subjected to debating on indi-

vidual research projects, cooperatively writing and discussing articles needed to fulfill the publication requirements and to prepare the defense of the dissertation.

The curriculum of the Meteorology programme consists of a *compulsory state module* in “Climate Dynamics”, *elective modules of the professional specialization* and module of the individual educational paths in the areas of “Climate change and the general circulation of the atmosphere”, “Water problems and their solutions” as well as “Statistical analysis and general circulation model”. There are also “Research Seminars”, subjected to debating on individual research projects, cooperatively writing and discussing articles needed to fulfill the publication requirements and to prepare the defense of the dissertation.

The peers do not really support the amount of courses in the PhD-programme because they think that competences to be gained by coursework is sufficiently addressed already by the master’s programmes and that the PhD-level should be consequently sharpened towards the individual research work of PhD-students. But on the other hand, the peers accept that the amount of coursework does not belong to the faculty’s range of decisions and that courses are going to be adapted to the individual theses of PhD-students.

With this clarification, the audit team confirms that the respective criteria for programme content are fulfilled. It supports the faculty in any means possible to further sharpen the structure of the programme towards more research orientation.

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

As the university does not comment the peers’ assessment nor provides additional documents related to the main aspects dealt with under this criterion, the peers confirm their original assessment. Namely, they do not consider the criterion to be fulfilled with regard to the link of research to the defined programme outcomes and related activities of staff members. They thus consider the need for a corresponding concept to be submitted by the university.

With no further comments from the university, the peers also still find it recommendable to enhance the influence of the university teaching staff in defining and updating the programme content.

The peers welcome the clarification of the curriculum for the PhD programme Meteorology but do not derive any diverging assessment about the programme contents from it.

### 3. Courses/Modules: Structures, Methods and Implementation

#### Criterion 3.1 Structure

**Evidence:**

- Self-Evaluation-Report
- Module descriptions

**Preliminary assessment and analysis of the peers:**

Both PhD programmes last three years in full-time-provision. The research work of PhD-students is planned to start from the beginning (usually in continuation of research work done at master's level). The first two years are devoted to preparative and empirical tasks. The third year is dedicated to the completion of the dissertation. In view of the peers, the early starting point is absolutely necessary for succeeding in doing substantial research work and matching publication requirements defined in the PhD-programmes.

In the first two years, the individual research work is supplemented by courses adding in total to a workload reported to equal 125 ECTS. This overall structure is defined by state regulations. Although there are some initial compulsory modules, most of the curriculum consists of electives, which can be adapted to students' research work, and research seminars, in which substantial parts of the preparation of publications and of the dissertation take place.

The audit team considers the structure of the programme to be clearly defined and the criteria to be met.

#### Criterion 3.2 Workload

**Evidence:**

- Module descriptions
- Discussion with responsible staff from the faculty

**Preliminary assessment and analysis of the peers:**

As already explained, there are no students enrolled in both programmes (chapter 1.1). The review is therefore limited to the plausibility of intended workload in the module descriptions, which made a reasonable impression on the audit team. Because of the gradually unpredictable nature of research processes being the priority of both programmes, the audit team recommends to monitor the overall workload of prospective students thoroughly and to handle coursework as flexible as possible.



With the recommendations made, the audit team considers the respective criteria at present to be fulfilled.

### Criterion 3.3 Teaching methodology

**Evidence:**

- Module descriptions
- Discussion with responsible staff from the faculty

**Preliminary assessment and analysis of the peers:**

At the first glance, just having the module descriptions at hand, the course content of the PhD-programme seemed to prolong the education at master's level. This could be clarified in the discussion with faculty staff responsible for programme coordination and teaching staff. The faculty could credibly reason, that the courses held specifically for the small number of PhD-students are in general conducted in a rather seminary and problem-oriented style and that they are specifically adapted to the needs of the individual research work of PhD-students.

For this reason, the audit team considers the criteria to be sufficiently met.

### Criterion 3.4 Support and assistance

**Evidence:**

- Discussion with responsible staff from the faculty

**Preliminary assessment and analysis of the peers:**

In view of the audit team, there is a strong approach for support and advice implemented in the PhD-programme. Each PhD-student has two advisors, one from the faculty and one scientist from abroad. Upon entrance of the programme, students' are obliged to find an external supervisor for their thesis by e.g. reviewing international conferences and research publications. By criteria for the appointment of supervisors, they have to be a doctor of science with sufficient publication volume and impact within the realm of the PhD-students research work. There is a budget available, ensuring that PhD-students can visit the home-institution of the supervisors for altogether four months and by this means getting access to research equipment possibly not available at the home university. The budget also enables the external supervisor to visit the PhD-students at their home universities, getting their expenses compensated up to 15 days a year. The relationship to this external supervisor is structured by contracts. This is considered to be an excellent solution by the audit team. The relationship to the supervisor from the faculty is described by students as daily presence and communication.

The means taken by the faculty for supporting and advising students are completely appropriate in the eyes of the peers.

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

Since the university made no comments, the peers confirm their preliminary assessment of this criterion. They consider it to be fulfilled but encourage the university to closely monitor students' workload in the frame of the quality assurance mechanisms.

## 4. Examination: System, Policy and Forms

<b>Criterion 4 Exams: System, policy and forms</b>
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**Evidence:**

- Discussion with responsible staff from the faculty

**Preliminary assessment and analysis of the peers:**

Concerning the exams related to the modules within the PhD-programme, the two mid-terms are usually conducted orally and the final exam as a written test. This is defined in the respective module descriptions. Taking into account that subjects and methods of courses at PhD-level can be adapted to the subjects of students' research work and theses, the peers accept this definition. The peers strongly support any efforts to enhance flexibility in the design of coursework at PhD-level.

Another feature of both programmes to be handled like exams are requirements with regards to publications. They are formal standards to be met to allow students defending their final thesis. The programme defines six articles in total at minimum (three national and three international publications) – hereof one article listed in SCOPUS/Thomson Reuters with an impact factor above zero – and three presentations at international conferences. These requirements are reported to be taken into account when selecting students for the PhD-programme.

More important than course based exams or publication requirements is the assessment of the final PhD-thesis. For this purpose, the Kazakh Ministry for Education and Science appoints a Council for Defense of the PhD-theses, which is composed from 12-18 scientists in a particular field. Usually, one third each is recruited from National Universities, from other universities and from Kazakh research institutions. Students have to prepare a seminar and a report on the topic of their research work. The chair supervising the student then makes a decision whether to allow the defense of the final thesis or not. The defense is a two staged procedure starting in the first stage with a decision on an ade-

quate qualification of the council (with regards to the presented research work) and then proceeding with the defense itself. In the defense, PhD students are obliged to explain the scientific innovation as well as the practical value of their research work. The audit team accepts this elaborate but internationally unusual procedure.

Overall, with the recommendations mentioned, the audit team considers the defined criteria for exams to be sufficiently fulfilled.

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

While taking into account that no comments were submitted by the university, the peers still consider this criterion to be fulfilled.

## 5. Resources

### Criterion 5.1 Staff

**Evidence:**

- Staff handbook in the Self Evaluation Report
- Discussion with members of the university management

**Preliminary assessment and analysis of the peers:**

In the discussion with the peers, the member of the university management resumes the yet ongoing transformation process of al-Farabi University into a research institution, after being a more educationally oriented university in former times. Concerning scientific staff, this is to be achieved by a results-based management approach, which appears in individual agreements on objectives and individual reporting, taking into account the research performance to 50%, the educational performance to 35% and to 15% the social work of teaching staff in creating a generation with a deep respect to society.

In general, the academic career stages lead from the position of a young researcher to an assistant professor to an associate professor and then to a full professorship with the latter being the only permanent position in the academic career. The appointment to titles is based on requirements set by the Ministry of Education and Science, mostly taking into account the number of publications and their impact factor. The requirements are elevated towards the next position. Staff recruitment in general is conducted by open calls (e.g. announcements in newspapers) and for new specialities, staff is partly recruited directly from companies, partly from universities. There is also a governmental budget available for the integration of foreign researchers.

There is maximum number of PhD-students fixed stating three PhD-students per supervisor. The quality criteria applied for external supervisors count as well for internal supervisors. This means that supervisors have to be professors, holding a doctor of science and showing adequate research performance in terms of volume and impact. Concerning the present staff engaged in the PhD-programme, the audit team had a good overview through the staff handbooks provided in the Self Evaluation Report. The member from the university management confirms that the present faculty-staff is assured for the provision of the programme in the certification period.

The peers had a close look at the research performance of staff as a prerequisite for research projects of prospective PhD-students (also mentioned in chapter 2.1). In the staff handbooks, publications lists have been provided and the faculty publishes some of its projects on the websites. The faculty also reports to conduct joint projects together with partners e.g. from Europe (e.g. University of Salzburg, University of Leipzig, VW-Stiftung, University of Reading, British government) and to participate within the framework of TEMPUS. The discussions convinced the audit team that staff from the departments conducting both PhD-programmes has defined research interests and is motivated to strengthen research orientation of their programmes and the respective prerequisites, but is presently constricted by some unfavorable conditions.

The perceived lack of an institution independent from government responsible for research funding was already expressed in chapter 2.1. Furthermore, the peers perceived a need for enhancing the opportunities for staff development. Sabbaticals (to improve research skills) are in principle available, but the audit team perceived them as quite short and available just occasionally. The same counts for the issue of academic mobility of staff. Against the background of the transformation objectives of al-Farabi University towards a research university, the audit team strongly recommends to enhance the respective institutional setting.

The audit team furthermore strongly supports the efforts of al-Farabi Kazakh National University, which is reported to be working close with the ministry, to obtain more autonomy. The present certification is reported to be a part of these efforts.

<b>Criterion 5.2 Institutional setting, funding and equipment</b>
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**Evidence:**

- Discussion with members of the university's management
- Self-Evaluation-Reports
- Visits of laboratories (in the university and in non-university institutes)

**Preliminary assessment and analysis of the peers:**

In the discussion, the member of the university's management confirms the future financial stability of both PhD-programmes and their sufficient staff resources. This convinces the audit team that sufficient resources are guaranteed for the period of certification.

The self-evaluation-report provides a detailed list of the laboratory and IT-equipment available. Additionally, the faculty reports to share university labs together with e.g. the Faculty for Chemistry to do research on e.g. radiation in the air.

To review the complete institutional environment for both PhD-programmes, the audit team visited two non-university research institutes (*Institute of Geography, Almaty* and the *National Center of Space Research and Technologies, Almaty*) and one state company providing meteorological services (*Kazhydromet*). In this shared setting, the *GIS-technology* and *remote sensing equipment* available for PhD-students in Cartography was seen as sufficient for innovative research, but most modern equipment is necessary to achieve international level in research. Concerning the institutional setting, the peers felt the need to foster international cooperation and participation in international scientific societies in the respective field. For Meteorology, a lack of any modern experimental research equipment as eg *remote sensing equipment for local uses* was perceived. This has to be solved to assure that the defined learning outcomes of the PhD-programme can be achieved.

With the constraints mentioned, the audit team confirms the respective criteria to be fulfilled.

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

As the university did not submit any comments, the peers uphold their original assessment of this criterion. They find the programmes lacking in terms of research activities of the teaching staff, the cooperation with non-university institutes, the integration of the faculty in international academic associations, the opportunities of staff development as well as the academic mobility of staff. They confirm the need for a concept to be provided that would allow for the intensification of research activities of staff and consequently of students.

## 6. Quality Management: Development and Enhancement

### Criterion 6.1 Quality assurance & enhancement

#### Evidence:

- Auxiliary document: “University-wide Academic Policies and Procedures of al-Farabi Kazakh National University”
- Discussion with staff responsible for the PhD-programme

#### Preliminary assessment and analysis of the peers:

Concerning quality assurance and further enhancement, the member of the university management explains to have implemented an ISO 9001 approach for management- and administration-oriented issues.

Concerning the academic quality, the organizational setting with two supervisors, one from the faculty and one from abroad, fulfills a function of quality management. Additionally, there is a fixed ratio of three PhD-students maximum per supervisor. Concerning higher organizational instances, the *Vicerektor for Academic Issues* is the relevant representative of the university management to consult if deficiencies would be perceived by students with regards to the quality of the PhD-programme.

Considering the yet nascent status of the PhD-programme, the audit team considers quality assurance procedures in place. But a quality assurance policy, as stated by criteria, is not yet visible. The audit team therefore recommends the faculty to devise a quality-assurance policy for both PhD-programmes.

### Criterion 6.2 Instruments, data and methods

#### Evidence:

- Self-Evaluation-Report
- Discussions with staff responsible for faculty management

#### Preliminary assessment and analysis of the peers:

The Self-Evaluation-Report for the PhD-programme presents information about teaching-staff-capacity and equipment. Since no PhD-students are enrolled at present, because the ministry did not allocate state grants for the two programmes, data on students’ progress cannot be presented.

The audit team does not request any further data, but considers this topic to be addressed for the future with the recommendation on a quality assurance policy as already mentioned.

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

While no comments were provided by the university, the peers consider this criterion to be principally fulfilled. They would, however, consider it important that a quality assurance policy be set up and implemented taking into account the specific needs and objectives of PhD programmes.

## 7. Documentation & Transparency

### Criterion 7.1 Relevant documents

**Evidence:**

- Auxiliary document: “University-wide Academic Policies and Procedures of al-Farabi Kazakh National University”
- Self-Evaluation-Report of the PhD-programme

**Preliminary assessment and analysis of the peers:**

Most regulations-relevant topics are explained in the “University-wide Academic Policies and Procedures of al-Farabi Kazakh National University” (*admissions, overall structure of programmes, examination, grading, organizational structure of the university*). This policy is published on the websites of al-Farabi-University.

The audit team expects the characteristics of the programmes to be adequately defined in the respective regulations.

### Criterion 7.2 Certificate upon conclusion

**Evidence:**

- Self-Evaluation-Report of the PhD-programme

**Preliminary assessment and analysis of the peers:**

In line with the programme description provided in the Self-Evaluation-Report, graduates are awarded the titles “Ph.D. in Cartography” respective “Ph.D. in Meteorology”.

At present, the al-Farabi-University has just started to provide a diploma supplement as an auxiliary document to the degree certificate and the already delivered transcript of records (which was made available to the audit team). With regards either to the objective of al-Farabi University to establish a conversion towards the European Higher Education Area as well as the requirements of the ASIIN seal, the peers strongly support the idea of providing a diploma supplement to the graduates. This document should describe

the awarded qualification and the educational system of Kazakhstan – in this way fostering comprehensibility and comparability between the educational systems.

With the mentioned constraint, the peers consider the criteria to be fulfilled.

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

The peers acknowledge that the university submitted a number of sample diploma supplements for Bachelor's degree programmes. However, as no leaving certificate or diploma supplement was provided for the PhD programmes under review, the peers would find it necessary that such documents are provided as is common in the European Higher Education Area where PhD programmes are considered to be the third cycle of higher education. While they had understood that the university has already begun the award, it is not sure to which extent this is included in programme regulations. They advise the university to make use of the model was developed by the European Commission, the Council of Europe and UNESCO/CEPES.



## **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. Diploma Supplement (explaining the degree awarded and the Kazakh educational system)

## **E Comment of the Provider (25.08.2014)**

The institution did not provide a statement. They submitted additional documents on the following issues:

Diploma Supplements for several Bachelor's Degree programmes

## F Summary: Peer recommendations (17.10.2014)

Taking into account the additional information and the comments given by the university, 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
Cartography	awarded with requirements	11.11.2019 (upon fulfillment of requirements)
Meteorology	awarded with requirements	11.11.2019 (upon fulfillment of requirements)

### Requirements

#### For both PhD programmes

- A 1. (ASIIN 7.2) A Diploma Supplement must be submitted for each programme in line with the model developed by the European Commission, the Council of Europe and UNESCO/CEPES.

#### For the PhD programme Cartography

- A 2. (ASIIN 2.1, ASIIN 5.1, ASIIN 5.2) A concept has to be provided, how research in Cartography is going to be intensified as a prerequisite for successful independent international research of PhD students. This concept should refer to the defined outcomes of the PhD-programme, cooperation with non-university institutes, the integration of the faculty in international academic associations, the opportunities of staff development and the academic mobility of staff.

#### For the PhD programme Meteorology

- A 3. (ASIIN 2.1, ASIIN 5.1, ASIIN 5.2) A concept has to be provided, how the research base in Meteorology is going to be broadened as a prerequisite for successful independent international research of PhD students. This concept should refer to the defined outcomes of the PhD-programme, the integration of the faculty in international academic associations, the enhancement of the respective laboratory experimental equipment as stated in the report, the opportunities of staff development and the academic mobility of staff.

**Recommendations**

**For all PhD programmes**

- E 1.(ASIIN 2.4) A greater proportion of responsibility should be given to academic staff to define the programme in consultation with the ministry.
- E 2. (ASIIN 6.1) A quality assurance policy for the PhD-programme should be devised to guide the future development of the programme.
- E 3.(ASIIN 3.2) Within the quality assurance policy, the overall student workload should be monitored thoroughly.

## **G Decision of the Certification Committee (11.11.2014)**

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.

Accordingly, they made amendments to the requirements 1. In particular, they did not consider the award of a Diploma Supplement, as reserved for First and Second Cycle degree programmes, reasonable whereas an informative leaving certificate or similar document would be beneficial for PhD holders.

As the intended objectives and programme level learning outcomes are currently only available on the intranet, the committee members decided to add a further new requirement (no. 3) to stipulate that these must be accessible also to external stakeholders such as applicants and employers.

The Certification Committee re-worded the former requirements 2 and 3 to make them more concise.

Former recommendation 1 was deleted as it seemed to be out of the scope of the certification procedure. Former recommendation 2 was into the new recommendation 1 as it had seemed contradictory in that a quality assurance policy already exists, and in order to allow for an overarching, all-encompassing quality assurance approach.

The Certification Committee decides to award the following certificates:

<b>PhD Programme</b>	<b>ASIIN Certificate</b>	<b>Maximum duration of certification</b>
Cartography	awarded with requirements	31.12.2019 (upon fulfillment of requirements)
Meteorology	awarded with requirements	31.12.2019 (upon fulfillment of requirements)

## **Requirements**

### **For both PhD programmes**

- A 1. (ASIIN 7.2) (ASIIN 7.2) A programme-specific leaving certificate or equivalent document has to be prepared and handed out to students on a regular basis providing information about the objectives, intended learning outcomes, structure and level of the degree, as well as about an individual's performance. It must also explain the educational system of Kazakhstan in order to foster comprehensibility and comparability between the educational systems.
- A 2. (ASIIN 2.1, ASIIN 5.1, ASIIN 5.2) For the purpose of enabling staff to conduct relevant research and to enhance further development, staff members must be enabled to better combine teaching load with research work. The university must clarify how the policy regarding sabbatical and academic mobility of staff is implemented.
- A 3. (ASIIN 2.1) The learning outcomes must be accessible to all stakeholders, including prospective students, potential employers and any interested party.

### **For the PhD programme Meteorology**

- A 4. (ASIIN 5.1, ASIIN 5.2) An investment has to be provided, how the enhancement of the respective laboratory experimental equipment as stated in the report will be implemented.

## **Recommendations**

### **For all PhD programmes**

- E 1. (ASIIN 3.2) Within the quality assurance policy feedback loops and further development of the programmes should be carefully implemented. In addition, the students and other stakeholders should be involved in the quality assurance process more actively.