ASIIN Accreditation Report

Bachelor's Degree Programme
Mathematics

Master's Degree Programmes
Mathematics (Educational Mathematics)
Physics (Actual problems of Modern Physics)
Informatics (Informatics and Informatization of Education)

Provided by
Abay Kazakh National Pedagogical University (KazNPU)

Version: April 8th 2016

Table of Content

RefHeading Toc379969638

A About the Accreditation Process

Title of the degree Programme[1]	Labels applied for	Previous ASIIN accreditation	Involved Technical Committees (TC)2
Ba Mathematics	ASIIN	n/a	04, 12, 13
Ma Mathematics (Educational Mathematics)	ASIIN	n/a	04, 12, 13
Ma Physics (Actual problems of Modern Physics)	ASIIN	n/a	04, 12, 13
Ma Informatics (Informatics and Informatization of Education)	ASIIN	n/a	04, 12, 13

Date of the contract: 1st of March 2013

Submission of the final version of the self-assessment report: 31st of March 2014

Date of the on-site visit: 8th -9th of October 2014

at: Abay Kazakh National Pedagogical University, Almaty, Kazakhstan

Peer panel:

Prof. Dr. Hans-Ulrich Bühler, University of Applied Sciences, Fulda

Alexandra Dreiseidler, Emil-Fischer Gymnasium, Euskirchen

Prof. Dr. Andreas Griewank, Humboldt-University, Berlin

Prof. Dr. Michael Müller-Preussker, Humboldt-University, Berlin

Prof. Dr. Helmut Rudolph, University of Applied Sciences, Leipzig

Prof. Dr. Andreas Schwill, University of Potsdam

[1] Comment of the ASIIN Managing Office (June 2015): The English translation of the names of the degree programmes have been adapted in this report on the cover page, in the table above, in the table on page 5 as well as all tables as of page 57ff. During the procedure the discussion is based on the names of the Modular Education Progamm (specialization) of the degree programmes. All official documents will, however, use the English names as stated here.

[2] TC 04 – Informatics/Computer Science); TC 12 – Mathematics; TC 13 – Physics.

Prof. Dr. Rita Wodzinski, University of Kassel
Representatives of the ASIIN headquarter: Thorsten Zdebel
Responsible decision-making committee: Accreditation Commission for Degree Programmes
Criteria used: European Standards and Guidelines, version 10.05.2005 ASIIN General Criteria, version 28.06.2012 Subject-Specific Criteria of Technical Committee 04 – Informatics as of 09.12.2011 Subject-Specific Criteria of Technical Committee 12 - Mathematics as of 09.12.2011 Subject-Specific Criteria of Technical Committee 13 - Physics as of 09.12.2011

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

B Characteristics of the Degree Programmes

a) Name & Final Degree	b) Areas of Specialization	c) Mode of Study	d) Duration & Credit Points	e) First time of offer & Intake rhythm	f) Number of students per intake[3]	g) Fees (translation into € varies depending on currency rates)
Mathematics, B.Ed.	n.a.	Full time and part time	8 semester 150 KZ credits = 240 ECTS	Sept 2004, annually (fall term)	150 (on average)	635 800 kzt per year (for foreign students or if not covered by state grant)
Mathematics (Educational Mathematics), M.Ed.	n.a.	Full time	4 semester 51 KZ credits = 147 ECTS	Sept 2011, annually (fall term)	17 (on average)	646 300 kzt per year (for foreign students or if not covered by state grant)
Physics (Actual problems of modern physics), M.Ed.	n.a.	Full time	4 semester 51 KZ credits = 147 ECTS	Sept 2011, annually (fall term)	12 (on average)	646 300 kzt per year (for foreign students or if not covered by state grant)
Informatics (Informatics and informatization of education), M.Ed.	n.a.	Full time	4 semester 51 KZ credits = 147 ECTS	Sept 2011, annually (fall term)	34 (on average)	646 300 kzt per year (for foreign students or if not covered by state grant)

For the degree programme B.Ed. Mathematics, the self-assessment report states the following **intended learning outcomes**:

Graduates acquire the following *professional competence (PC)*:

1. have personal characteristics necessary for the teaching profession, which are credibility, model role, poise, punctuality, endurance;

2. have an understanding of the role and importance of the profession of "teacher" in the society.

3. understand the impact of their activities on the environment and are aware of the need for sustainable development,

4. able to work in a team and have a communicative, organizational and group skills needed for this;

5. apply knowledge of foreign languages to work with the literature and scientific work in mathematics;

[3] Because of the absence of a fixed number of enrolment places, an average of the accepted students in the last three years is presented.

6. know how to organize the training and development of students, the design and management of the pedagogical process, diagnosis, correction, forecasting the results of educational activities;

7. know how to organize and conduct scientific research in the field of applied mathematics, mathematics, pedagogy, psychology and teaching methods;

8. know how to organize cultural and leisure-time work with the young students in the field of information and communication technologies, information technology, multimedia, education and development programs, methodologies and technology education in the field of information security and information culture;

9. have a deep knowledge of mathematics (algebra and number theory, geometry, functional relationships, chance and probability, etc.);

10. possess expertise in the field of mathematics and its applications;

11. have an understanding of the relationship of mathematics and other sciences;

12. able to independently observe and analyse, formulate and solve the problems and challenges with the use of mathematical and computational tools;

13. use methods of mathematics - reasoning, problem -solving and modeling;

14. apply abstract thinking pattern recognition and analogies;

15. formulate and solve simple math problems using the tools of mathematical and computer software;

16. able to report significant results of mathematics;

17. know how to plan , organize and implement the educational process in mathematics.

Graduates acquire the following *social competence (SC)*:

1. able to communicate on the content and the selected discipline problems both with colleagues and with members of the general public, including those from other countries in a foreign language,

2. aware of the social and ethical responsibility and recognize professional ethical principles and norms of their discipline,

3. capable of individual and group work with members of other ethnic groups of both sexes, to the organization and effective implementation of projects to assume the appropriate management responsibilities,

4. capable of learning throughout life;

5. own information technology and tools to search, analyse and present information;

6. able to establish and maintain the necessary contacts with other people;

7. build effective communication and interpersonal communication, a dialogue in a foreign language, follows the rules of the culture of speech in public speaking;

8. own methodology of philosophical understanding of the world and education as an integrated system;

9. know the basics of economics, psychology and special disciplines that address the management objectives;

10. capable of changing social, economic, professional roles, geographic and social mobility;

11. possess critical thinking, mental operations, methods of personal expression and self - development;

12. independently solve cognitive problems, have a social responsibility for the results of their professional work.

The following **curriculum** is presented:

cycles of discipline	codes of discipline	The name of discipline	number of credits	Academic load								Distribution of hours for courses							
				ECTS	exam	The volume of the credits in hours	Contact hours			IWWT	IW	1st year		2nd year		3rd year		4th year	
							lectures	sminars (practical)	laboratory			15 weeks	15 weeks	15 weeks	15 weeks	15 weeks	15 weeks	15 weeks & term	15 weeks
												weekly hours							
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
General studies module (GSM) - 33 credits (53 ECTS)																			
Required component (RC) - 33 credits (53 ECTS)																			
GSM RC 01	K(R)Ya 1101	Kazakh (Russian) language	6	10	1 - 2	270		90		90	90	6	6						
GSM RC 02	IK 1102	The history of Kazakhstan	3	5	2	135	15	30		45	45		6						
GSM RC 03	EcoUR 1203	Environment and Sustainable Development	2	3	4	90	15	15		30	30				4				
GSM RC 04	IYa 1104	Foreign Language	6	10	1 - 2	270		90		90	90	6	6						
GSM RC	Inf 1105	Computer science	3	5	1	135	15		30	45	45	6							

05																			
GSM RC 06	Fil 1206	Philosophy	3	5	3	135	15	30		45	45			6					
GSM RC 07	Pol 1207	Political science	2	3	4	90	15	15		30	30				4				
GSM RC 08	OET 1208	Foundations of Economic Theory	2	3	3	90	15	15		30	30			4					
GSM RC 09	Soc 1209	Sociology	2	3	3	90	15	15		30	30			4					
GSM RC 10	OP 1210	Foundations of Law	2	3	4	90	15	15		30	30				4				
GSM RC 11	OBZh 1111	Principles of Life Safety	2	3	2	90	15	15		30	30		4						
GSM RC 12	FV 1112	Physical education			1 - 4							4*	4*	4*	4*				
Module of basic subjects (MBS) - 64 credits (104 ECTS)																			
Required component - 20 credits (32 ECTS)																			
MBS RC 01	VVP 2101	Introduction to the teaching profession	1	2	1	45	15			15	15	2							
MBS RC 02	Ped 2202	Pedagogy	3	5	3	135	15	30		45	45			6					
MBS RC 03	Etn 2203	Ethnopedagogics	2	3	4	90	15	15		30	30				4				

MBS RC 04	PRCh 2104	Psychology and Human Development	3	5	1	135	15	30		45	45	6								
MBS RC 05	Sam 2105	Self-knowledge	2	3	3	90	15	15		30	30			4						
MBS RC 06	VFShG 2106	Age physiology and school hygiene	2	3	1	90	15	15		30	30	4								
MBS RC 07	PKYa 2307	Professional Kazakh (Russian) language	2	3	5	90		30		30	30					4				
MBS RC 08	POIYa 2308	Professionally-oriented foreign language	2	3	6	90		30		30	30						4			
MBS RC 09	MPM 2309	Methods of Teaching Mathematics	3	5	6	135	15	30		45	45						6			
Elective component (EC) - 44 credits (72 ECTS)																				
MBS EC 01	MA 2101 OGMA 2101	Mathematical analysis Main chapters of mathematical analysis	12	20	2 -5	540	45	135		180	180		8	6	4	6				
MBS EC 02	AG 2102 G 2102	Analytic Geometry, Geometry	3	5	2	135	15	30		45	45		6							
MBS EC 03	ATCh 2203 A 2203	Algebra and Number Theory Algebra	5	8	3 -4	225	30	45		75	75			4	6					
MBS EC 04	DU2204 DIU2204	Differential equations, Differential and Integral Equations	2	3	4	90	15	15		30	30				4					

MBS EC 05	PRMZ 2305 PRNMZ 2305	Workshop to solve the mathematical problems. Workshop to solve non-standard mathematical problems	3	5	5	135		45		45	45					6			
MBS EC 06	KA 2406 AF 2406	Comprehensive analysis Analytic Functions	3	5	7	135	15	30		45	45							6	
MBS EC 07	UChP 2307 UMF 2307	Partial differential equations Equations of mathematical physics	3	5	6	135	15	30		45	45						6		
MBS EC 08	IYa2208	Foreign language-2	2	3	3	90		30		30	30			4					
MBS EC 09	TFDP 2409 TFFA 2409	The theory of functions of a real variable Theory of functions and functional analysis	3	5	7	135	15	30		45	45							6	
MBS EC 10	CShMO 2410 IMMO 2410	Modern school mathematics education, Innovative methods in mathematics education	3	5	8	135	15	30		45	45								6
MBS EC 11	ChS 2411 PTCh 2411	Numerical systems Applied theory of numbers	3	5	7	135	15	30		45	45							6	
MBS EC	IM 2312	History of Mathematics	2	3	5	90	15	15		30	30					4			

12	NV2312	National education																	
Module majors (MM) - 32 credits (52 ECTS)																			
Required component - 5 credits (8 ECTS)																			
MM RC 01	TMVR 3301	Theory and methods of educational work	2	3	6	90	15	15		30	30						4		
MM RC 02	EM 3102	Elementary Mathematics	3	5	1	135	15	30		45	45	6							
Elective component - 27 credits (44 ECTS)																			
MM EC 01	TVMS 3301 St3301	Probability theory and mathematical statistics Stochastics	3	5	5	135	15	30		45	45					6			
MM EC 02	Fiz 3302 KMPh3302	Physics Computer Methods of Physics	2	3	5	90	15		15	30	30					4			
MM EC 03	YaP 3203 TP3203	Programming languages Programming Technology	3	5	4	135	15		30	45	45				6				
MM EC 04	MLDM 3304 OL3304	Logic and Discrete Mathematics Foundations of logic	3	5	6	135	15	30		45	45						6		
MM EC 05	DGT3405 OT3405	Differential geometry and topology Topology Basics	3	5	7	135	15	30		45	45						6		

MM EC 06	MORZ 3406 NOShKM 3406	Methodical bases of solving the problems Scientific Basis for School Mathematics	3	5	7	135	15	30		45	45							6	
MM EC 07	ChM 3407 MO 3407	Numerical methods Optimization methods	3	5	7	135	15	30		45	45							6	
MM EC 08	FA 3408 FP 3408	Functional analysis Functional spaces	3	5	7	135	15	30		45	45							6	
MM EC 09	IT 3309 WT3309	Internet technology Web technology	2	3	5	90	15	15		30	30							6	
MM EC 10	MME 3310 FM 3310 DGDU3310 DGA3310	Mathematical models in economics Financial Mathematics Additional chapters of differential equations Additional chapters of analysis	2	3	5	90	15	15		30	30					6			
TOTAL (theoretical training), KZ (ECTS):			**129 (209)**			**5805**	**630**	**1230**	**75**	**1935**	**1935**	**36**	**36**	**38**	**36**	**38**	**32**	**36**	**6**
Practice KZ (ECTS)			**12 (16)**										**2 (1)**		**2 (1)**		**4 (4)**		**4 (10)**
Final certification KZ (ECTS)			**9(15)**																**9 (15)**
TOTAL (only by EP) KZ(ECTS)			**150**										**30**	**30**	**30**	**30**	**30**	**30**	**30**

	(240)																

For the degree programme M.Ed. Educational Mathematics, the self-assessment report states the following **intended learning outcomes**:

Graduates acquire the following *competencies (PC)*:

1 own methods of teaching in higher education, know the basics of psychology and pedagogy, have the skills to develop new and existing techniques and the use of innovative forms of educational work;

2. are able to apply their knowledge and skills in the theory and practice in the field of education and higher mathematics;

3 able to extract and analyze information from various sources about the current state and prospects of development of mathematics education;

4. able to formulate and solve new research projects in the field of mathematics education;

5. can draw up reports, surveys, explanatory notes;

6. own written and oral communications in the official language, speak a foreign language in the professional field;

The following **curriculum** is presented:

Year of study	Name of the Module	subjects		Name of the subjects	credits	Number of ESTS	Form of control
		cycle	code				
1st year of study	**1 term**						
	General compulsory module 1	GC RC 01	IFN5101	History and science philosophy	2	5	Exam
	General compulsory module 2	GC RC 02	IYa5102	Foreign language	3	8	Exam
	General compulsory module 3	GC RC 03	Psi5103	Psychology	2	5	Exam
	General compulsory module 4	GC RC 04	Ped 5104	Pedagogics	2	5	Exam
	Compulsory module in the specialty-1 (Required majors)	Req Majors 01	FVA5201	Fundamental questions of mathematical analysis	2	5	Exam
	Optional modules for certain specialty-1	GC EC 01	MATMA5201	Methodological aspects of the theory of analytic functions	3	8	Exam
				Total for 1 term	**14**	**36**	
	2 term						
	Optional modules for certain specialty-2	MM RC OK 02	FVAGL 5201	Fundamental questions in algebra, geometry and logic	3	8	Exam
	Optional modules for certain specialty-3	GC EC 02	DGDU 5202	Additional chapters of differential equations	2	5	Exam
	Optional modules for certain specialty-4	MM EC 01	NTOM 5202	New learning technologies in mathematics	3	8	Exam

	Optional modules for certain specialty-5	MM EC 02	NOVMR 5203	Scientific basis of Master's research work	3	8	Exam
				Total for 2 term	**11**	**29**	
2nd year of study				**3 term**			
	Optional modules for certain specialty-6	MM RC 03	KTO 6203	Methodical features of estimation of mathematical knowledge in the conditions of credit system of training	2	5	Exam
	Optional modules for certain specialty-7	MM EC 05	MTOM 6204	Methodology and technologies of educating of higher mathematics	3	8	Exam
	Optional modules for certain specialty-8	MM EC 06	TODUVM6205	Applied orientation of educating of mathematics	2	5	Exam
				Total for 3 term	**7**	**18**	
				4 term			
	Optional modules for certain specialty-9	MM EC 07	IDFM 6206	Linear boundary value problems for integro-differential equation of Fredholm	2	5	Exam
				Total for 4 term	**2**	**5**	
				Total theoretical training plan	**34**	**88**	
	Practice module	PM1		Pedagogical practice	3	**3**	
		PM2		The research practice	3	12	
				Total Practice	**6**	**15**	
	Module of research work of a student	MRWS		**Module of research work of a student -**	**7**	**28**	
				Complex examination	1	4	Examination

			RPMD	Registration and protection Master’s dissertations	3	12	Dissertation
				Final state certification	**4**	**16**	
				Total on modular educational program	**51**	**147**	

For the degree programme M.Ed. Actual Problems of Modern Physics, the self-assessment report states the following **intended learning outcomes**:

Graduates acquire the following *competencies (PC)*:

1. possess the fundamental knowledge, knowledge of current scientific and technical achievements in the field of physics, the theories and methods of teaching physics and innovative technologies;

2. know how to plan and solve physical problems and applied research;

3. conduct scientific analysis and forecasting of various phenomena and processes, statistical analysis of the experimental results;

4. use modern information and innovative educational technologies.

The following **curriculum** is presented:

Year of study	Name of the module	Subjects		Names of subjects	credits	Number of ESTS	Form of control
		cycle	Code				
1st year of study	**1 term**						
	General compulsory module 1	GCM1	IFN 5101	History and science philosophy	2	5	examination
	General compulsory module 2	GCM2	IYa 5102	Foreign language	3	8	examination
	General compulsory module 3	GCM3	Ped 5103	Pedagogics	2	5	examination
	General compulsory module 4	GCM4	Psi 5104	Psychology	2	5	examination
	Optional module 1	OM1	FVEKL 5105	Physics high energy and cosmic rays	2	5	examination
	Research Module	RM	RM	Research work	1	4	
	Total for 1 term				**12**	**32**	
	2 term						
	Compulsory module in the specialty 1	CMS1	APSF 5201	Actual problems of modern physics	2	5	examination
	Optional Module 2	OM2	FON 5202	Physical basis of nanotechnology	3	8	examination
	Optional Module 3	OM3	AVSSFO5203	Topical issues content of secondary physical education	2	5	examination
	Optional Module 4	OM 4	TFKRSN5204	Theoretical physics and the concept of modern science	3	8	examination
	Research Module	RW	RW	Research work	2	8	

				Total for 2 term	**12**	**34**	
2nd year of study				**3 term**			
	Optional Module 5	MB 5	IKTO 6301	Interdisciplinary connection betweem physics	3	8	examination
	Optional Module 6	MB 6	SMPOKF6302	Modern methods of teaching general physics course	2	5	examination
	Optional Module 7	MB 7	FTT6303	Physical principles of atomic energy	3	8	examination
	Optional Module 8	MB 8	FPFD 6304	Logical – psychological basis of problem solving in physics	2	5	examination
	Research Module	MNIRM MNIRM	MNIRM MNIRM	Research work	2	8	
	Practice Module	PM	PM1	Pedagogical practice	3	3	report
				Total for 3 term	**15**	**37**	
				4 term			
	Optional module 9	MB 9	EVPKYaA6401	World evolution and nuclear astrophysics	3	8	examination
	Research Module	RW	RW	Research work	2	8	
	Research practices Module	PM	PM2	Research Practice	3	12	report
				Total for 4 term	**8**	**28**	
				Total theoretical training plan	**34**	**88**	
				Teaching and research practice	**6**	**15**	
				Research work	**7**	**28**	
	Final state certification						

				Complex examination	1	3	
				Registration and protection of the Master’s thesis	3	12	
				Total on modular educational program	**51**	**147**	

For the degree programme M.Ed. Informatics and Informatization of Education, the self-assessment report states the following **intended learning outcomes**:

Graduates acquire the following *competencies (PC)*:

1. own theory and methodology of teaching computer science in high school, aware of information technology tools and educational activities;

2. have the skills to use information and communication technologie s in various fields of educational activities;

3. are able to apply their knowledge and skills in professional activities, organization of scientific research;

4. able to extract from a variety of sources and analyse information on the current state and prospects of the development of computer networks and multimedia technologies and new ideas to use in their professional activities;

5. able to formulate and solve new research projects using the methodology of scientific research;

6. have skills in operating a modern apparatus and equipment for scientific research;

7. own written and oral communications in the official language, are fluent in a foreign language in th e professional field;

8. be familiar with the organizational and administrative activity, are able to work independently and in a team;

9. know the institutional framework of professional activities.

The following **curriculum** is presented:

Year of study	Name of the module	Subjects		Names of subjects	credits	Number of ESTS	Form of control
		cycle	code				
1st year of study	**1 term**						
	General compulsory module	GCM-BS - 1	IFN115101	History and science philosophy	2	5	examination
	General compulsory module	GCM-BS - 2	IYa115102	Foreign language	3	8	examination
	General compulsory module	GCM-BS - 3	Psi115103	Psychology	2	5	examination
	General compulsory module	GCM-BS - 4	Ped 5104	Pedagogics	2	5	examination
	Compulsory module in the specialty (Required majors)	CMS-RM-1	IOPO5201	Informatization in education and problem of learning	2	5	examination
	Optional modules for certain specialty	OMCS EC-1	OPI 5201	Organizing and carrying out pedagogical research	3	8	examination
					14	**36**	
	2 term						
	Optional modules for certain specialty	OMCS EC-2	PMS 5202	Programming in multimedia environments	2	5	examination
	Optional modules for certain specialty	OMCS EC-3	PIOEI 5201	Development and application of educational electronic editions and internet resources	3	8	examination

	Optional modules for certain specialty	OMCS EC- 4	MPFMKI 5202	Technique of teaching of formalization and modeling in a computer science course	3	8	examination
	Optional modules for certain specialty	OMCS EC -5	SMOKZ520 3	Modern methods of an estimation and control of knowledge	3	8	examination
				Total on term2	**11**	**29**	
				3 term			
	Optional modules for certain specialty	OMCS EC -6	MOIVS 6203	Theory and methods of teaching Computer science at higher school	2	5	examination
	Optional modules for certain specialty	OMCS EC -7	KTVMM 6204	Computer technologies of calculations in mathematical modeling	3	8	examination
2nd year of study	Optional modules for certain specialty	OMCS EC -8	KCIMT620 5	Computer networks, the Internet and multimedia technologies	2	5	examination
				Total on term3	**7**	**18**	
				4 term			
	Optional modules for certain specialty	OMCS EC -9	TOFIOS 6206	Theoretical fundamentals of developing Technology Based Learning Environments	2	5	examination
				Total on term4	**2**	**5**	
				Total theoretical training plan	**34**	**88**	
	Practice module	PM1		Teaching practice	**3**	**3**	
		PM2		Research practice	**3**	**12**	
	Research module of a student	RMS		**Research module**	**7**	**28**	

	Final state certification						
				Complex examination	1	4	examination
			RPMD	Registration and protection Master’s dissertations	3	12	dissertation
				Total on modular education programme	**51**	**147**	

C Peer Report for the ASIIN Seal

1. Formal Specifications

Criterion 1 Formal Specifications

Evidence:

- THE SELF-ASSESSMENT REPORT OF EDUCATIONAL PROGRAMS IN THE UNIFICATION OF PHYSICS AND MATHEMATICS CLUSTER, Abay Kazakh National Pedagogical University. Almaty, 2013.
- STATE EDUCATIONAL STANDARDS of the REPUBLIC OF KAZAKHSTAN: HIGHER EDUCATION. BACHELOR DEGREE. KEY POINTS. June, the 17th 2011
- STATE EDUCATIONAL STANDARDS of the REPUBLIC OF KAZAKHSTAN: HIGHER EDUCATION. MASTER DEGREE. KEY POINTS. June, the 17th 2011
- STATE OBLIGATORY STANDARDS OF FORMATION OF THE REPUBLIC OF KAZAKHSTAN for the specialities 5B010900 (B.Ed. Mathematics), 6M010900 (M.Ed. Mathematics), 6M011000 (M.Ed. Physics), 6M011100 (M.Ed. Informatics)

Preliminary assessment and analysis of the peers:

The formal specifications of the educational programmes are defined in the Self Assessment Report as presented in the table ahead. Concerning the programme names chosen, for the M.Ed. Educational Mathematics the educational focus of the programme is reflected within its name. With regards to the other programmes (B.Ed. Mathematics, M.Ed. Actual problems of modern physics, M.Ed. Informatics and informatization of education), the audit team identifies the need to clarify that the programmes lead to a teachers´ qualification at Bachelor's level respective to the additional qualification to educate teachers at Master's level. To distinguish these programmes from non-educational subject-specific programmes, programme names have to be revised to reflect this educational focus properly.

Concerning the awarded degree (*Bachelor of Education*/*Master of Education*) the denotation varies in the provided documents – most likely as a verbal simplification. In the respective State Obligatory Standards the degree is clearly defined as stated above. The audit team considers it to be a necessity that this degree title is stated within the Diploma Supplement to clarify the educational focus of the Master's programmes (7.2). They are consecutive programmes with a preceding Bachelor's degree. Both Bachelor's programmes in physics and informatics have been accredited by ASIIN in 2012.

The duration of studies derives from Kazakh state educational standards, which have been provided together with the Self Assessment Report. This means that the Bachelor's programme lasts for four years, in which 150 Kazakh credits are achieved (reported to correspond with 240 ECTS) and the Master's programmes lasts for two years with overall 51 Kazakh credits (reported to correspond with 147 ECTS). The Kazakh credit system uses an asymmetric scale for student workload at Bachelor's and Master's level, justifying with this fact the different conversion factors. The Bachelor's programme in mathematics is reported to be provided in *part-time* as well. In the audit it was clarified that "part-time" refers to the physical presence of students. The overall workload per term is not reduced, just one half of it is provided by distance learning. In this regard, the programme has to be considered as "full-time" as well, which has to be be clarified in the Diploma Supplement (7.2).

The expected intake of the programmes depends on state grants the Kazakh Ministry for Education and Science allocates annually. Additionally, bachelor students from Kazakhstan and abroad can enroll on a self-paid basis with the fees set according to transparent rules. The annual intake therefore varies. In the above table, the average over the last three years is presented.

With the remaining formal attributes (e.g. intake rhythm) being defined as well, the audit team considers the programmes to be adequately specified. The information is published on the websites of KazNPU.[4]

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

The peers note that not at least the educational profiles of the study programs are expressed via a digital and letter based classifier system. The peers also understand that this system is mandatory in Kazachstan. Nevertheless they still deem that the name of the degree-programs Bachelor Mathematics, Master Actual Problems of Modern Physics and Master Informatics and Informatization of Education are mistakable. In so far the peers still think, that the programme titles should point out the educational profile (Bachelor Mathematics) respectively the fact that a qualification in educating teachers is reached (Master). In this respect the peers cling to their primary assessment and consider criterion 1 to be partly fulfilled.

[4] http://www.kaznpu.kz/en/4/page/ (as of 14 Oct 2014)

2. Degree programme: Concept & Implementation

Criterion 2.1 Objectives of the degree programme

Evidence:

- Defined programme objectives in the Self-Assessment-Report
- Discussions with the responsible members of university management
- Discussions with staff responsible for managing the study programmes
- OECD (2014): Reviews of National Policies for Education. Secondary Education in Kazakhstan.[5]

Preliminary assessment and analysis of the peers:

[5] http://www.oecd-ilibrary.org/education/reviews-of-national-policies-for-education-secondary-education-in-kazakhstan_9789264205208-en (as of 14 Oct 2014)

Founded in 1928, KazNPU is reported to be the oldest Kazakh University, holding the status of one of nine "National Universities" of Kazakhstan. It offers undergraduate, graduate and PhD-programmes in Pedagogy, Humanities, Law, Arts, Social sciences and Business Administration, Natural Sciences and Technical Sciences. The programmes subject to this report are provided by the *KazNPU Institute for Mathematics, Physics and Informatics*.

In general, KazNPU delivers the fields of study addressed in this report in scientific and educational branches. Only the educational branches are subject to the present accreditation. With regards to the Bachelor's programme Mathematics, the objective is to cover the country´s demand of highly qualified teachers in secondary education with the presently required Bachelor's level. The OECD report states that staff vacancies in secondary mathematical education will rise in the next years, clearly indicating a need for teachers in this subject. The present objective of the Master's programmes is to fulfil the higher education institutions´ needs for staff in teachers´ education. The on-going reform of secondary education in Kazakhstan implies introducing a twelfth school year, introducing informatics education from the first school year and successively elevating teacher´s qualification in upper secondary education to graduates with a Master's degree from 2017 onwards. Considering these projected measures, the audit team clearly sees a need to educate even more students at Master's and PhD-level than at present.

The programmes can be considered as Bachelor's and Master's programmes with regards to level 6 and level 7 of the European Qualifications Framework.

Criterion 2.2 Learning Outcomes of the Programme

Evidence:

- Defined learning outcomes in the self-assessment report
- Discussions with staff responsible for managing the study programmes
- STATE OBLIGATORY STANDARDS OF FORMATION OF THE REPUBLIC OF KAZAKHSTAN for the specialities 5B010900 (B.Ed. Mathematics), 6M010900 (M.Ed. Mathematics), 6M011000 (M.Ed. Physics), 6M011100 (M.Ed. Informatics)
- Discussions with representatives of institutions employing graduates of the respective programmes

Preliminary assessment and analysis of the peers:

The formulation of learning outcomes at programme level is based on the subject-specific profile of the *KazNPU Institute for Mathematics, Physics and Informatics*, state obligatory standards defined for each speciality by the *Kazakh Ministry for Education and Science* and the consultation of institutions functioning as employers. These learning outcomes are

defined in terms of competences which is in line with the Dublin descriptors from the conceptual point of view.

The following sets of subject specific criteria are applied to assess the adequacy of the programmes: The *ASIIN Subject Specific Criteria for Mathematics (SSC 12),* for *Physics (SSC 13)* and for *Informatics (SSC 04).* The defined learning outcomes of the programmes correspond with these criteria as follows:

For the Bachelor's programme „Mathematics", the „profound overview of the contents of fundamental mathematical disciplines" and the ability to „identify their correlations" as required by the (SSC 12) is adressed by a „deep knowledge of mathematics (algebra and number theory, geometry, functional relationships, chance and probability, etc.)". The defined learning outcomes refer to subject specific problem-solving competences („recognise mathematics related problems, assess their solvability and solve them", „methods of mathematics - reasoning, problem-solving and modelling", „independently observe and analyse, formulate and solve the problems and challenges with the use of mathematical and computational tools") as well as the generic intellectual capacity of abstract thinking and reasoning. The learning outcomes cover social competences adequate to the SSC 12. Additionally, the Bachelor's programme in Mathematics defines educational competences to effectively fulfil the role of a teacher.

In perception of the audit team it seems to be "upside down" that the Bachelor's programme „Mathematics" requires competences to „conduct scientific research in the field of applied mathematics, mathematics pedagogy, psychology and teaching methods", focussing the learning outcomes at Master's level on the professional role of (educating) teachers. In the framework of teacher´s education, the learning outcomes can be seen as adequate to the SSC 12, but the audit team advocates that the profile of the Master's programme "Educational Mathematics" has to be sharpenen by stressing research oriented competences and focussing them on this level.

For the Master's programme "Actual Problems of modern Physics", the "sound knowledge of classical physics (mechanics, electrodynamics, thermodynamics, vibrations, waves and optics)" as required by the SSC 13 (for the Bachelor's level) is provided by the preceeding Bachelor's programme. The required "advanced [...] knowledge in natural sciences and mathematics, extended [...] overview of inner-physical correlations as well as those with related disciplines" is adressed in the learning outcomes by "fundamental knowledge, knowledge of current scientific and technical achievements in the field of physics, the theories and methods of teaching physics and innovative technologies". Subject specific problem solving competences as stated in the SSC ("classify physics-based and to some extent also interdisciplinary problems [...] and to analyse and/or solve them by using natural scientific and mathematical methods") are referred to in terms of graduates knowing "how to plan and solve physical problems and applied research" and being able

to “conduct scientific analysis and forecasting of various phenomena and processes, statistical analysis of the experimental results”. Although the defined learning outcomes point out some educational competences (“use of [...] innovative educational technology”), they should be developed further in terms of educational and social competences. At present, the educational focus of the programme is not stressed clearly enough. In a subject specific perspective on teachers´ education, the learning outcomes are considered to be adequate to the SSC 13.

The defined learning outcomes of the master programme “Informatics and Informatization of Education” contain subject specific, research oriented as well as educational competences comparable with the SSC. In a subject specific perspective, they refer to the ability “to [...] analyse information on the current state and prospects of the development of computer networks and multimedia technologies and new ideas to use in their professional activities; comprehensive understanding of applicable techniques and methods and their limits”. The audit team identifies the focus of the programme in applying multimedia technologies to educational purposes and educating pupils in e-competence and programming-skills. The programme does not lead to the “profound knowledge and understanding of the principles of informatics” as required by the SSC 04 for subject-specific master programmes in informatics, but for the explicit educational purpose, the objectives are seen as adequate. Nevertheless, the audit team encourages the university to revise the learning outcomes, because the present formulation is not in every case competence-oriented, operationalised and does not reflect the competenceprofile of the teaching profession properly.

In summary, the programmes addressed by this report can be considered as adequate to the relevant ASIIN SSC in the framework of their educational objectives. Inevitably, the provided level of subject-specific knowledge does not match with non-educational programmes in the respective subjects. Nevertheless, the audit team advocates further developing the formulation of learning outcomes (as stated above), to sharpen the profiles and foster international comprehensibility. The present formulation of the non-subject-specific learning outcomes (e.g. in *pedagogy*) differs between the programmes - although every programme leads to the same profession. Therefore, the non-subject-specific outcomes have to be adjusted over all programmes to clarify the teaching qualification obtained. A small remark in this context aims at the use of the verb “to own” in the English translation. It should be replaced e.g. by “to comprehend” or “to understand”.

The audit team can confirm the outcome-quality of the programmes after the discussion with the employers, who were invited by the *KazNPU Institute for Mathematics, Physics and Informatics*. Representatives from schools, non-university-research-institutes and governmental agencies were present in these discussions. They confirmed the validity of the defined learning outcomes at programme level, their achievement as well as the

employers´ involvement in the respective formulation (e.g. by an annual conference with teachers in secondary education). Although the programmes are thus considered to fit labour market needs, even further strengthening practical experience of Bachelor's students in educating pupils was deemed as recommendable for the further development of the programmes by representatives from school.

At present it is not clear whether or not the defined learning outcomes at programme level, as stated in the self-assessment report are accessible to the relevant stakeholders (particularly lecturers and students), so that they e.g. can appeal to them while expressing their perception of quality for an internal feedback. The audit team therefore considers the accessibility to the relevant stakeholders a necessity for the successful implementation of the key quality assurance processes, so that it is absolutely necessary to publish the learning outcomes on the website and in the Diploma Supplement (7.2).

Criterion 2.3 Learning outcomes of the modules/module objectives

Evidence:

- Module descriptions
- Objectives matrix provided in the Self-Assessment-Report
- Discussions with staff responsible for managing the study programmes
- Discussions with teaching staff
- Discussions with students

Preliminary assessment and analysis of the peers:

KazNPU has provided an objective's-matrix, in which the relation between objectives, learning outcomes and subjects developing the defined outcomes becomes recognisable. For all theoretical components of the programmes, informative module descriptions are available, specifying knowledge, abilities and competences which students are expected to achieve. However, there are some deficiencies concerning the module descriptions:

The audit team noticed some inconsistencies between module titles in the study plan and titles in the module descriptions. This makes the understanding of the module handbook difficult. The audit team therefore considers the harmonization of the titles to be a necessity.

The definition of the learning outcomes for the modules of the Master's programme "Informatics and Informatization of Education" were considered as too generic in many cases. This becomes evident e.g. in the module outcomes of "Programming in multimedia environments" and "Computer networks, the Internet and Multimedia Technologies", which are identical. The audit team therefore requires the enhancement of the learning outcomes at module level in a subject-specific perspective.

As far as the/reading lists stated in the module descriptions are concerned, KazNPU apparently translated the titles of mostly Russian and Kazakh publications into English without any further bibliographical note. Surely this was done in concession towards the audit team, but it resulted in difficulties to identify those publications and their publishing language. The audit team thus requests to correct missing or misleading bibliographical references.

A module description for the final theses (including the final exam) is missing for all study programmes. This description is especially important, because the preliminary student workload for this final thesis spreads over several modules in the course of the educational process. The overall student workload has to be stated in the module description.

For the Master's programmes, a module description for the "Pedagogical Practice" and for several modules explicitly devoted to "research" are missing. As for the latter, KazNPU reports to develop individual study/research plans with relation to the students´ final theses. For the ASIIN criteria and for the international comprehensibility of the programmes it would be necessary to include those modules into the handbook.

At the moment, it is not completely clear whether the module descriptions are published in total on the websites of the KazNPU Institute for Mathematics, Physics and Informatics. At present, only a short Russian description of the so-called "Elective Modules" is available on the website.[6] Hence the audit team requires the module descriptions to be published in total.

Criterion 2.4 Job market perspectives and practical relevance

Evidence:

- Discussions with staff responsible for managing the study programmes
- Statistics on Employment of graduates provided in the Self-Assessment-Report
- Discussions with employer's representatives
- Appendix 7 to the Self-Assessment Report

Preliminary assessment and analysis of the peers:

The Bachelor's programmes qualify for teaching in all classes of the secondary education system in Kazakstan in the respective subjects. The first three professional years of the professional activity are guided by mentorship of experienced teachers. The educational process is followed . by providing additional /further training for special purposes not subject to university education (e.g. handling pupils with disabilities).

[6] http://www.kaznpu.kz/en/1173/page/ (17/Oct/2014)

The on-going reform of the Kazakh secondary education system projects the implementation of a twelfth school year, the introduction of Informatics education from the first year onwards and the enhancing the teachers´ qualification by requiring a Master's level, successively starting from 2017. The OECD report on secondary education already states vacancies in the respective subjects in schools, especially for mathematics education. Considering the framework of the reforms, the audit team expects a growing demand for the Master's and PhD-level. At present, the Master's level qualifies for educating teachers at universities and for professional roles in governmental agencies or non-university research institutes. For the future, a rising demand for masters in the secondary system is forecasted.

The KazNPU provided statistics on the professional placement of graduates and representatives of different types of employing institutions attended the audit. They confirmed the link of the programmes to professional practice and their own participation in curricular development (e.g. in form of an annual conference with teachers). This convince the audit team of the job market perspectives provided by these programmes, although salaries and status of the teaching profession are still low. It is seen as beneficial that the programmes contain educational practice right from the start in each year and that internships in schools are subject to contracts between the university and schools. Regulations on internships have been provided as Appendix 7 of the Self-Assessment Report. Nevertheless, a need of even further strengthening students´ practical experience in educating pupils was communicated by representatives from schools. This is supported by the audit team.

Criterion 2.5 Admissions and entry requirements

Evidence:

- Discussions with staff responsible for managing the study programmes
- Rules for admission provided as Appendix 5 to the Self-Assessment-Report
- OECD (2014): Reviews of National Policies for Education. Secondary Education in Kazakhstan.[7]

Preliminary assessment and analysis of the peers:

For the admission to the Bachelor's programme, Kazakh students have to pass the Unified National Test (UNT), a state comprehensive exam leading to the distribution of state grants on a competitive basis. The UNT is conducted as a multiple choice exam covering competences in Mathematics, natural sciences, languages, and history. In order to participate in competition for grants, the overall score of this test must be 70 of a total of

[7] http://www.oecd-ilibrary.org/education/reviews-of-national-policies-for-education-secondary-education-in-kazakhstan_9789264205208-en (14/Oct/2014)

100 points as a minimum. State grants are awarded for specific programmes, covering study fees and to some extend the costs for accommodation and subsistence. Otherwise students can enroll on a self-paid basis, but the entrance score in the UNT has to meet 60 of 100 points as a minimum. The amount of study fees is fixed at a comparable level like the state grants provided by the ministry. This also counts for the admission of international students, who have to prove command of Kazakh language before enrolling into a programme. In total, the ratio of self-paying full time students in the Bachelor's programme in mathematics is reported to be low. For the "part-time"-programme, the number of self-paying students exceeds the number fitted with grants.

Compared to the admission to Bachelor's programmes, the Master's programmes are more selective. Students have to prove a Bachelor's degree in the respective subjects, command of a foreign language (other than Kazakh and Russian) and they have to pass the entrance exam conducted specifically for each programme by the university itself. Taking into account the vacancies stated by the OECD report on Kazakh secondary education and the on-going reform of the secondary education system in Kazakhstan the audit team clearly sees the need to educate more students at Master's level than at present and to educate more PhDs to ensure sufficient academic staff capacity for this effort.

With regards to the ASIIN criteria, the audit team considers admission standards and procedures to be adequately defined (mostly by regulations of the Kazakh Ministry of Education and Science) and beneficial to the achievement of programme learning outcomes. They ensure equality of entry qualifications to the required extent.

Criterion 2.6 Curriculum/Content

Evidence:

- Study plans provided in the Self-Assessment-Report
- Objective's matrices provided in the Self-Assessment-Report
- Module descriptions
- Discussions with staff responsible for managing the study programmes
- Discussions with teaching staff

Preliminary assessment and analysis of the peers:

For each study programme, a module handbook, a study plan and an objectives matrix have been provided, proving the coherence between the defined programme-outcomes and the objectives on the module level. This documentation was in general perceived as helpful and informative, besides the following identified weaknesses: Unfortunately, the study plan for the Bachelor's programme in Mathematics contains too much information and spreads over several pages. The audit team would thus appreciate getting an easily comprehensible study plan (preferably on one page). Furthermore, module titles vary

between the study plans and the module descriptions,causing uncertainties in the identification of modules.

The Bachelor's programme „Mathematics" aims at *subject-specific knowledge and skills in mathematics*, *educational knowledge and skills required for the teaching profession* as well as *social competences and generalized knowledge*. The „deep knowledge of mathematics (Algebra and Number Theory, Geometry, Functional relationships, Chance and Probability, etc.)" required for the teaching profession is mainly provided by modules from the „elective" components of the Modules of Basic Subjects (MBS) and in an advanced sense from the „elective" components of Module Majors (MM). „Elective" in this context refers to subjects chosen autonomously by the university (3.3). With regards to international curricular standards, the audit team encourages to incorporate the linear algebra contents of the more advanced course „Algebra and Number Theory" into the course on Analytic Geometry to obtain the by now internationally standard basic course on "Linear Algebra and Analytic Geometry". Stochastics, although present in the curriculum, should be strengthened (e.g. in the framework of elective modules).

Explicit workshops and „practical work/internships" (i.e. practical trainings?) are devoted to mathematical problem solving. In this context, an uncertainty about the programming languages could not be solved at the on-site-audit. The languages „Turbo Pascal" and „QBasic", mentioned in several module descriptions (e.g. „Computer methods in Physics", „Programming Languages"), provoked an rather outdated impression. During the on-site-visit it was reported that C++ is in use. Presently it is difficult to assess the actual usage of programming languages. Therefore the audit team requests a clarification by KazNPU in which modules which programming languages are taught.

Educational knowledge and skills are trained within the general Modules of Basic Subjects (MBS) and Major Modules (MM), which are the same for each study programme leading to a teacher´s qualification for secondary education. In this area, courses on subject-specific- and general pedagogy, psychology, age physiology, language and the introduction to the teaching profession takes place. This theoretical knowledge is applied in the educational practice starting from the first year onwards. As for pedagogy in general, the audit team did not find specialized subjects e.g. how to handle learning disabilities (e.g. dyslexia).

Concerning the defined objective to „conduct scientific research in the field of applied mathematics, mathematics pedagogy, psychology and teaching methods" (as mentioned in chapter 2.2), the audit team does not see that this goal is implemented in the Bachelor's programme´s curricula. Explicit research work leading to this objective does not start before the Master's education. Therefore the audit team requests an adaption of the defined learning outcomes.

The training of social competences including language capability and generalized knowledge starts with the state-compulsory modules in the first and second term, which are defined by the government for each study programmes. It continues within the practical parts of the programme.

The Master's programme "Educational Mathematics" deepens the skills acquired in the Bachelor's programme with the purpose of enabling graduates to educate teacher´s for secondary schools. Additionally, the Master's programme trains students´ ability to conduct research within dedicated modules leading to the Master's thesis. As mentioned before, this has to be clarified within the defined learning outcomes for the Master's level. Educational skills are deepened mostly within state compulsory modules (on psychology, pedagogy, etc.) and within the "Educational practice" at Master's level. Subject-specific knowledge, skills and pedagogic approaches as well as research-oriented competences are trained in the "Elective Modules".

For the Master's programme "Actual Problems of Modern Physics", the "fundamental knowledge, knowledge of current scientific and technical achievements in the field of physics, the theories and methods of teaching physics and innovative technologies" is subject to the "elective" modules. Besides the modules on subject-specific-pedagogy (e.g. "Modern Methods of Teaching General Physics Course"), the electives contain modules on subjects like "Physical basis of Nanotechnology", "Physical Principles of Atomic Energy". With regards to its interdisciplinary connection to other subjects and its presence in up-to-date technology, the audit team advises to strengthen "Modern Optics" and "Laser Physics" as an enrichment of the curriculum.

Research competence ("knowing how to plan and solve physical problems and applied research", being able to "conduct scientific analysis and forecasting of various phenomena and processes, statistical analysis of the experimental results") is trained in the research oriented modules leading to the Master's thesis. Educational competences, which should be stressed at programme level (2.2), are represented within the curriculum by state compulsory modules, elective modules on subject-specific pedagogy and the "pedagogical practice". Unfortunately, a module description for the latter is missing (as mentioned in chapter 2.3). During the on-site visit, the panel learned that this practice takes place at the university and aims at providing experience in educating teachers. Nevertheless, a module description for the educational practice has to be provided.

The defined learning outcomes of the Master's programme Informatics and Informatization of Education contain "subject specific", "research oriented" as well as "educational competences". In a subject specific perspective, they refer to the ability "to [...] analyse information on the current state and prospects of the development of computer networks and multimedia technologies and new ideas to use in their professional activities; comprehensive understanding of applicable techniques and

methods and their limits". This is achieved by offering such modules as e.g. "Informatization of Education", "Development and application of educational electronic editions and internet resources", "Computer networks, the Internet and multimedia technologies", "Programming in multimedia environments". In the framework of modules training *e-competence* and its application to education, it was seen as beneficial to strengthen the topic of "IT-Security" and to add actual topics (e.g. "Big Data", "Mobile Computing"). For the time being, the IT security is dealt with in the module "Computer Science", which in perception of the audit team underestimates the actuality of this topic. Educational competences are deepened within state-compulsory-modules (on e.g. pedagogy, psychology), modules devoted to subject-specific-pedagogy (e.g. "Theory and methods of teaching Computer Science at higher school") and in the "Educational Practice". As mentioned before, a module description for the "Educational Practice" has to be provided. With regards to programming languages, the same uncertainty occurs like in the physics programme. The languages „Turbo Pascal" and „QBasic", mentioned in several module descriptions (e.g. „Computer methods in Physics", „Programming Languages"), seem to e quite outdated. At the on-site-audit it was reported that C++ is in use. Presently it is difficult to assess the actual usage. Therefore a clarification is requested.

With the restrictions mentioned, the curricula are considered to be in line with the defined programme objectives. Proposed curricular topics are only meant as perspectives for a further development of programme-contents within an area of real "elective modules" students are entitled to choose between (please see chapter 3.3).

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

2.1. The HEI resigned to provide a feedback concerning this criterion. In so far the peers hold on to their primary assessment and keep the respective recommendation concerning the increase of students at the masters and PhD Level up.

2.2. Regarding the relation between the learning outcomes of the Bachelor programme "Mathematics" and the Master programme "Educational Mathematics" the HEI points out, that the competences of "carrying out scientific research in the sphere of Mathematics, applied Mathematics, Pedagogy, Psychology and Teaching methods" are the basis for subject-specific professional activity as well as for further education at Masters degree. These competences especially build the fundament for the "ability to formulate and solve new research projects in the sphere of educational mathematics" awarded within the Masters´ degree. The peers consider this explanation to be sufficient and see their respective assessment to be modified.

Regarding the learning outcomes of the Masters programme "Actual problems of modern Physics" the peers recognized a lack of "educational and social competences". In this

respect the HEI provides a list of eight fields of competences awarded by graduates of this study programme. The peers concede that some of these competences refer to general questions in teaching and didactic. Nevertheless the peers can´t retrace the source of this competence profile. The differences to the ones provided in the self assessment report are obvious, though. They suppose that this possibly is an extended and revised version of the originally profile. Nevertheless they keep their primary assessment up.

Regarding the Masters programme "Informatics and Informatization of Education" the peers estimate the revised learning outcomes given in the statement of the HEI as a distinct improvement in comparison to the ones provided with self assessment report. The learning outcomes are more competence-oriented and operationalised and reflect the teaching profession more properly.

A minority of the peers deems, that the learning outcomes should be generally better structured and better coordinated. The learning outcome "the students are able to formulate and solve new research projects using the methodology of scientific research" should not only be used for the Masters programme "Informatics …" but also for the remaining Masters programs. In so far the minority the minority argued for an additional recommendation: *It is recommended that the learning outcomes should be generally better structured and better coordinated.*

Regarding all study programs under review the HEI did not proof that the revised competence profiles/learning outcomes have been issued and fixed as well. The link provided within the statement leads to an obscure "security warning" anyway. In this respect they keep their former assessment up. They think the respective requirement should be modified as follows: *It has to be assured that the revised learning outcomes provided with the HEIs statement are fixed, published and accessible at least for students and the teaching staff.*

2.3. The peers note that the HEI has provided revised module descriptions (Appendix 1). The shortcomings valuated in the report seem to be fixed. In so far they see their respective assessment partly modified. Concerning the publishing of the module description though, the links provided within the statement of the HEI lead to the Russian description of some elective modules. The access to the materials for the master programme was even not possible. In so far they think the respective requirement should be modified as follows: *It has to be assured that the revised module descriptions provided with the HEIs statement are published and accessible for students and teaching staff.*

In this respect the peers cling to their primary assignment and the respective requirement.

2.4. The peers note that the recommended change of contend and extend of the pedagocial practice in the Bachelor programme should be implemented when the reform

of the Kazakh secondary education system is completed. The peers appreciate this approach and keep their respective assessment up.

2.6.: The peers deem that the study plan for the Bachelors programme Mathematics provided with the statement of the HEI is indeed more comprehensible and clearly arranged.

The peers note and appreciate, that the HEI is going to strengthen the Stochastics in the Bachelors Mathematics module “Probability theory and Math Statistics”. That the discipline “Theory of random processes in Stochastics” should be included into the elective component of the Master´s educational programme is considered to be beneficial as well.

The peers deem that that the use of programming languages in the Bachleor´s programme Mathematics has been clarified with the additional document provided together with the statement of the HEI. Although the domination of “Pascal” and “Virtual Basic” seems a little bit old fashioned it is visible that more modern languages as “C” and “C++” are thought as well. In so far the peers consider the programme languages used to be adequate for the Bachelor programme.

Regarding the impartment of educational knowledge within the Bachelor programme the peers apprecicate that the HEI is willing to take their hints into account. They note that parts of subject related education and inclusive pedagogy are taught in the discipline “informatization of education and problems of education”. Nevertheless the peers deem that this point should be considered in the frame of the reaccreditation. Therefore they cling at their respective recommendation.

The peers criticized that with respect of the Bachelor programme the defined learning outcome “conduct scientific research in the field of applied mathematics, mathematics pedagogy, psychology and teaching methods” is not concretized within the curriculum. In so far they requested an adaption of the defined learning outcomes. In this regard the HEI refers to the “diploma project” that includes an independent completed scientific work. The peers still think that the impartment of “scientific research” generally is ambitious for a Bachelors programme. With the Bachelors thesis in mind they belief that the conduction of a limited independent scientific research project in the fields of Mathematics (or its didactics) is realistic, though.

Taking the statement of the HEI into account, the peers estimate criterion 2 to be partly fulfilled.

3. Degree Programme: Structures, Methods & Implementation

Criterion 3.1 Structure and modularity

Evidence:

- Self assessment report
- module handbook

Preliminary assessment and analysis of the peers:
All programmes are modularized. Each module contains several types of educational courses, leading to coherently defined outcomes. The content is specified in module descriptions and distinguished from the competence based module objectives. In general, the module descriptions are deemed to be thoroughly set up and informative.

In case of the Master programme "Informatics and Informatization of education", the module descriptions raise the impression of being overburdened in content with relation to learning outcomes and student workload. The audit team requests to take this into account in the revision process.

Concerning contents, publications mentioned have been translated into English without any further bibliographical remark. The audit team requests to clarify the bibliographical references, because at the moment the publishing-language is not visible. Unfortunately, the module descriptions do not define the form of examination. In fact, they refer to a topic named *"Study and examination requirements and forms of examination"*, but the related descriptions just mention the learning outcomes required for examination, not the examination method itself (*oral exam*, *written exam*, *multiple-choice-test*). With regards to the ASIIN-criteria, the module descriptions have to provide information on the form of examination, which must be adequate for assessing the achievement of the envisaged competences.

The sequence of modules can be anticipated from the study plans, KazNPU has delivered for each programme. Admission only takes place in the fall term. Therefore, the modules only have to be (and are) provided in each second term.

Concerning the size and duration of modules in the Bachelor's programme Mathematics, modules usually tend to be finished within one term and students in total attend 6-8 modules per term. An accentuated exception from this rule is the *"Mathematical Analysis"*-module. It is taught from the second to the fifth term – spreading over two years in total and containing 20 ECTS. The on-site visit showed that examinations are held each term and that the shape of the module does not conflict with e.g. academic mobility. In general, a flexible combination of modules is not targeted by the programmes, because

as described in chapter 3.3, the whole curriculum has to be considered as mandatory. Academic student mobility is - technically - possible at Bachelor's level, but it is not supported by the present institutional setting. The "Bolashak"-programme, supporting academic mobility with funds, is only available for students from the Master's level onwards.

At Master's level module size and duration ranges between 5-8 ECTS and all modules are finished within one term. There are no visible obstacles for academic mobility in this cycle and KazNPU has implemented respective recognition procedures (explained in chapter 3.2).

From the module descriptions it becomes clear that there is generally no intersection between modules at Bachelor's and modules at Master's level. An exception is the module "Computer networks, the Internet and multimedia technologies" in the master programme „Informatics and informatization of education". A similar module can be found in the preceeding Bachelor's programme. The audit team therefore requests a clarification if those modules are identical and if they are, a justification of the purpose of the module at Master's level.

Supporting students´ opinion expressed during the on-site visit, the audit team encourages strengthening the academic mobility already at the Bachelor's level. The modular structure of the programmes technically supports academic mobility but further financial support (like the Bolashak programme) is needed to foster academic mobility at Bachelor's level.

Criterion 3.2 Workload and credit points

Evidence:

- Self-Assessment-Report
- Module Handbook
- Discussions with students
- Discussions with teaching-staff
- Appendix 8 to the Self-assessment reportSelf-assessment reportexplaining the "transfer of credits"

Preliminary assessment and analysis of the peers:

The compulsory parts in all programmes are credited with student workload. KazNPU consistently applies the Kazakh credit system as well as its conversion into ECTS. This conversion is comprehensible on the basis of the "total hours" allocated for student´s workload in the module descriptions. In this framework, the Bachelor's programme Mathematics leads to 150 Kazakh Credits respective 240 ECTS and the Master's programmes lead to 51 Kazakh Credits respective 147 ECTS. The unequal conversion factor

results from the Kazakh credit system using different metrics for workload at Bachelor's and Master's level.

Credits are only awarded if students successfully pass the module exam. Overall, the projected time budgets are considered to be realistic. It is helpful that the module descriptions differentiate between time for lectures, internships/practical workpractical work/internships, labwork, tutorials and time for self-studies. In all programmes, practical components like internships are supervised (in this case from the school as well as from the university), reported about and reflected in theoretical education. Hence it is reasonable to award credits for them.

In the Bachelor's programme Mathematics, workload is reported to be evenly distributed with 30 ECTS per term. In the lecture period, about 32 to 38 weekly hours for the attendance in theoretical courses are projected. Adding the workload for self-studies within and outside the lecture period, this is perceived to be adequate. For the case of so called "part-time" students, it was already clarified in chapter 1 that "part-time" rather means "distance-education", because of students not having a reduced workload but a shift from the mandatory attendance in theoretical lectures to self-studies.

At first glance, the workload allocated for *practical work/internships* in the Bachelor's programme Mathematics seemed to be rather high in comparison to the amount for *lectures*. In the discussions with students and teaching staff it could be clarified that *practical work/internships* do not only have repetitive functions but facilitate further theoretical input. Students characterize them as especially helpful for deepening knowledge. The workload partition is therefore seen as reasonable.

In all Master's programmes, study plans indicate that student workload especially in the first semesters exceeds 30 ECTS per term. This is compensated in the following second and third semester. This unequal distribution has to be considered with a certain amount of flexibility – allowing students to shift workload from the first semester to the later ones. Students describe especially the first semesters to be quite challenging. Afterwards, they perceive a shift towards more independence and self-guided learning.

Recognition of external achievements (e.g. in the case of international student mobility), as indicated by the submitted documents, is based on a learning-agreement approved in advance by the dean. Students apply for recognition to the Rector of the University. Responsible for the verification of substantial differences between curricula and learning outcomes is the dean. The process defines the documents to submit, a timeline and the definition of responsibilities – indicating that the burden of proof lies by the university. In this regard, recognition procedures can be considered to meet the standards of the Lisbon Recognition Convention.

Overall, the allocation of student workload is considered to be reasonable. On explicit request, there were no complaints from students indicating unjustified workload for certain modules or in total.

Criterion 3.3 Educational methods

Evidence:

- Module descriptions
- Discussions with staff responsible for managing the study programmes
- Discussions with teaching staff
- Discussions with students

Preliminary assessment and analysis of the peers:

KazNPU reports to apply lectures, practical work/internship, tutorials, labwork and self-studies besides from some project-based methods of teaching and learning. This indicates the variety of teaching methods supporting the achievement of learning outcomes. Students especially consider *practical work/internships* as helpful to deepen theoretical knowledge. The ratio of *lectures* to *practical work/internships* is one third to two third at Bachelor's level and two to one third at Master's. Project-based teaching, although visible, could be enhanced in perception of the audit team. Another option for further development would be introducing video based feedback on the students´ teaching performance.

KazNPU reports having implemented a multilingual policy in its study programmes, expecting lecturers and students to teach/study in Kazakh, Russian and English. This language policy is supplemented by mandatory course offers (e.g. „Russian for professional purposes"). Investigating this issue, the audit team did not have an indication that this policy results in problems. Having an extensive amount of workload allocated for practical work/internships at Bachelor's level presumably helps tackling language problems.

Concerning the „elective" modules, a clarification had to be made during the on-site-audit. „Electives", as understood by KazNPU, refer to the subjects KazNPU defines autonomously for its study programmes (besides from state compulsory modules). The term „Electives" in this understanding does not refer to subjects students are able to choose, although students can participate to some extent in the definition of curricula. The outcome of several discussions at the at-site-audit was, that there is no possibility for students to choose between subjects and that curricula have to be considered compulsory in all their parts. Students´ choice would be required to meet the understanding of „electives" represented by the audit team. It seems to be an option to extend the range of course offers by reducing group size for courses.

With regards to the ASIIN-criteria, the audit team advocates the implementation of real "electives", not only because of compliance with accreditation criteria, but because it considers having a choice as a substantial enrichment of the academic experience provided by those programmes. This view is supported by students attending the discussions of the on-site audit.

Criterion 3.4 Support and advice

Evidence:

- Self-Assessment Report
- Staff handbook
- Discussions with staff responsible for managing the study programmes

Preliminary assessment and analysis of the peers:
KazNPU provides a handbook to first year students covering all relevant information. Online-resources are also available, enabling students and parents to monitor students´ progress via Internet. In general, the ratio of teaching staff to students is favourable, fitting each study group of eight students at BBachelor's level with a mentor from teaching staff. At Master's level, this ratio is even better. KazNPU also organises leisuretime activities for its students and provides service and advice for academic mobility.

This convinces the audit team of sufficient resources for support and advice.

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

3.1.: The peers appreciate, that the HEI (by its own account, though) has added the examination conditions in the master´s degree module descriptions. As stated above at the moment the peers can´t convince themselves of the result of this measure, they hold on their respective assessment.

Regarding the unclear distinction between the correspondent Module "Computer Networks, the Internet and multimedia technologies" in the Bachelors and Masters "Informatics and informatization …" programme, the comparison of learning outcomes provided in Appendix 4 still does not show significant differences between the both modules. The similarity between "Backgrounds and history of the internet origin" (Bachelors programme) and "Tendencies of Computer Networks development" (Masters programme) is obvious for example.

Regarding the remaining parts of criterion 3, the HEI did not provide any statement. In this respect the peers hold on the primary assessment and the respective requirements and recommendation.

Taking the statement of the HEI into account, the peers assess criterion 3 to be partly fulfilled.

4. Examination: System, Concept & Implementation

Criterion 4 Exams: System, concept & implementation

Evidence:

- Regulations on examination provided as Appendices 9-13 of the Self-Assessment-
- Discussions with teaching staff
- Discussions with students
- Module descriptions
- Draft of the Diploma Supplement provided as Appendix 15 of the Self-Assessment-Report

Preliminary assessment and analysis of the peers:
Exams are conducted as mid-term and final exams. KazNPU reports to apply a variety of examination methods, including oral examinations, suitable to the defined learning outcomes at module level. At Bachelor's level, there are more written exams and multiple choice tests, whereas the examination policy at Master's level tends to include more oral exams. Unfortunately, these examination methods and the regulations concerning the repetition of failed exams were not adequately defined in the module descriptions. With regards to examination methods, the module descriptions have to be enhanced as stated in the chapter 2.3.

Exams are held within one week at the end of each term and exam dates are published in advance at its beginning. The total number of exams per term does not exceed eight. Students confirm that examination questions are closely related to modules and that pressure in the examination period is acceptable. Drop-out-rates are reported to be low. Students have also the option to appeal against unfair marks and to have an insight into examination results.

The audit team did not find any information on the calculation of the final grade. It is neither described in the module descriptions nor in the Diploma Supplement. The audit team therefore requests information on this topic and also considers a transparent calculation of the final grade in the diploma supplement a necessity as well as the weighting of each exam in the module descriptions.

Every programme is concluded by a final thesis. A selection of final theses for every programme was analysed by the audit team, either in its Russian original or based on the English abstracts of the thesesThe final theses proved students' capacity of substantial

academic work suitable for the objectives of the programmes. The grades were constantly at the top of the available range, indicating a positive selection. Unfortunately, a module description for the final theses is missing. The amount of workload allocated especially to the Master's theses could not easily be identified in the study plan. In the audit, it could be clarified that the total workload for final theses spreads over several modules. The audit team again points out the necessity of a sound module description for final theses in every study programme.

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

Regarding the missing information about the examination conditions and the workload of the Master-Thesis in the module descriptions of the masters programme cf. Chapter 2.4., 3.

The peers note, that with its statement the HEI provided an overview about the grading system in generally. An explanation of how the final grade is calculated is added as well. The peers consider this calculation to be transparent.

Taking the statement of the HEI into account, the peers consider criterion 4 to be partly fulfilled.

5. Resources

Criterion 5.1 Staff involved

Evidence:

- Self-Assessment-Report
- Staff handbook provided as Appendix B of the Self-Assessment-Report
- Discussion with members of the university management
- Discussions with teaching staff

Preliminary assessment and analysis of the peers:
Staff engaged in the programmes is listed in the Self-Assessment Report and described in a staff handbook provided in the appendices.

Given that the ratio of students to teaching staff is fixed by the ministry of education, staff capacity is considered to be favourable and enables studying in small groups. Additional staff capacity can be engaged for e.g. the correction of exams. Staff workload comprises educational services, research and administrational activities. Academic staff has the option to increase salaries by conducting externally funded (research) projects.

Nevertheless, the emphasis lies on teaching workload, whereas workload for research could be enhanced in perception of the audit team.

With regards to research, staff reports to conduct mostly applied and developmental research in (subject-specific) pedagogy. The respective activities result e.g. in producing educational materials like manuals and ICT-resources. The audit team appreciates these visible activities as a beneficial resource for the study programmes but recommends strengthening topics in evaluation research, since these initiatives are not visible by now. This would result in a more balanced comprehension of educational research, which is seen as especially beneficial for education at Master's level.

As far as publications are concerned, it was hardly possible to identify the language of publications, because the whole list was translated into English without any further bibliographical remark. A table provided in the self-assessment report summarizes the publication activity in the period from 2009 to 2012. It showes that most publications are educational literature mainly provided in Russian and Kazakh. Publications in refereed international journals are identifiable, but should be enhanced in perception of the audit team.

In summary, research activity suits the objectives of the programmes, but it should be developed further on basis of the preceding remarks. Quality and quantity of staff can be considered as sufficient for the implementtaion of the programmes.

Criterion 5.2 Staff development

Evidence:

- Self-Assessment-Report
- Discussion with members of the university management

Preliminary assessment and analysis of the peers:

KazNPU reports that the teaching staff is allowed and requested to take part either in didactical further training or further training on higher education management topics every five years. Apart from weekly staff workload allocated for research-activities, the rectorate confirms the availability of sabbaticals. International staff mobility critically depends on the acquisition of external funds. Considering the focus on mostly Russian and Kazakh publications in the staff handbook and the module descriptions, the conditions for academic staff mobility should be further developed. In perception of the audit team, this is important to ensure international competitiveness of research as well as compliance to international curricular standards in the long term perspective.

In summary, the conditions for staff development can be seen as sufficient but should be further developed.

Criterion 5.3 Institutional environment, financial and physical resources

Evidence:

- Visit of the laboratories at the Institute for Mathematics, Physics and Informatics
- Self-Assessment-Report
- Discussions with members of the university management

Preliminary assessment and analysis of the peers:

Funding critically depends on state grants allocated annually by the Kazakh Ministry of Education and Science. Additional sources of funding are reported to be increased, but still only a small amount of the university´s budget comes from e.g. a dedicated fund for research projects. The funding procedures by the state grants ensure that staff-to-student-ratio stay stable when student numbers are fluctuating. The rectorate of the university additionally confirmed stable financial conditions of the programmes at least for the accreditation period. In perception of the audit team, the present funding procedures result in unfavourable conditions for human resource development, because the amount of annual grants is a factor of uncertainty. With regards to funding, in perception of the audit team the university needs more grants for PhD-students to saturate its own human-resources-demand. In general, the audit team would rather appreciate a (partially) fixed budget. In conclusion, the financial perspective of the programmes is considered as sufficient, but the audit team stresses the fact that the award of the ASIIN-seal is connected to stable funding.

During the on site visit, the audit team inspected the required infrastructure for teaching and learning (laboratories, libraries, computer rooms, educational media). The audit team deemed the laboratories to offer well-suited options for educational training and the educational equipment to meet high-quality-standards. Students also confirmed that the equipment and access to ICT facilities (even to a supercomputer in another faculty when justified e.g. by the topics of final theses) is sufficient. Additional computer cabinets are available in the dormitories and nowadays, most Kazakh students tend to have their own laptops. The material conditions are therefore seen as adequate for the implementation of the programmes.

KazNPU reports to have established international contacts to i.a. European and Russian universities. In order to highlight two cooperations, KazNPU has recently founded of a joint college degree together with the Sorbonne-University. The college is about to start the implementation of two double degree programmes in “International Relations” and “International Business”. Secondly, KazNPU has a strong cooperation with the Pedagogical University of Freiburg, comprising joint research visible in publications and international mobility of students and staff. Master students are also reported to succeed in applying for mobility grants provided by the Kazakh Ministry for Education and Science. Altogether, the policy concerning the acquisition of international partner universities is clearly visible.

Taking into account students' eagerness to study abroad, this policy should be actively pursued.

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

5.1., 5.2.: Taking the statement of the HEI into account the peers hold on their primary assessment and the respective recommendations.

5.3.: The peers register the additional information regarding the university´s international partnerships. They register as well that according to the HEIs statement many student use these partnerships to gain international experience. The peers appreciate this development and encourage the HEI to carry on fostering student´s mobility.

Taking the statement of the HEI into account, the peers estimate criterion 5 to be generally fulfilled.

6. Quality Management: Further Development of Degree Programmes

Criterion 6.1 Quality assurance & further development

Evidence:

- ISO 9001-compliance certificate provided as Appendix 14 of the self-assessment report
- Discussions with students
- Discussions with teaching staff

Preliminary assessment and analysis of the peers:
KazNPU reports to follow an ISO 9001 certified quality management system, covering the areas of teaching staff, curricula, material and information resources and in this way enabling a continuous improvement of educational services. KazNPU also reports to conduct annual surveys on teaching staff performance and as a recent initiativeon general educational conditions. Students participate in the relevant commissions on each level.

After discussions with teaching staff and students, the audit team comes to the conclusion that course-based-feedback by students happens rather on an informal level. The first persons to address besides the lecturers are tutors/supervisors? and the dean. Teaching staff is reported to be receptive concerning students´ feedback. By advising the university to actively pursue its quality management policy, the audit team encourages to introduce further formal instruments for the systematic course feedback. This should cover

students´ feedback on the achievement of the learning outcomes and on the de facto workload spent for the module.

Criterion 6.2 Instruments, methods and data

Evidence:

- Self-Assessment-Report

Preliminary assessment and analysis of the peers:

In its self-assessment report, KazNPU provided statistics on student numbers, international mobility, graduation and placement at the job market. It is also possible to track students´ performance via Internet (individual password needed). Furthermore, KazNPU informed the team on a recent student survey on the quality of educational and service provisions. The audit team would appreciate to see the output of the survey and requests this document to be delivered together with the university´s feedback on the accreditation report.

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

6.1. According to the statement provided, the HEI spends a lot of effort in analyzing the quality of teaching learning conditions and the educational process in generally. Nevertheless the peers still think that a formal method of *course based* students´ feedback/evaluation has to be established. In so far they hold on their primary assessment and the respective recommendation.

6.2. Due to the fact that the provided results of the recent student survey are in Cyrillic Script, they can´t be used by the peers. In so far the peers would really appreciate to see an English translation of the survey.

Taking the statement of the HEI into account the peers assess criterion 6 to be partly fulfilled.

7. Documentation & Transparency

Criterion 7.1 Relevant Regulations

Evidence:

- Self-assessment report including Appendices
- STATE EDUCATIONAL STANDARDS of the REPUBLIC OF KAZAKHSTAN: HIGHER EDUCATION. BACHELOR DEGREE. KEY POINTS. June, the 17th 2011
- STATE EDUCATIONAL STANDARDS of the REPUBLIC OF KAZAKHSTAN: HIGHER EDUCATION. MASTER DEGREE. KEY POINTS. June, the 17th 2011

- STATE OBLIGATORY STANDARDS OF FORMATION OF THE REPUBLIC OF KAZAKHSTAN for the specialities 5B010900 (B.Ed. Mathematics), 6M010900 (M.Ed. Mathematics), 6M011000 (M.Ed. Physics), 6M011100 (M.Ed. Informatics)

Preliminary assessment and analysis of the peers:
KazNPU has provided all relevant regulation on the study programmes as appendices of the self-assessment report. Most subjects are directly regulated by government orders, which are accessible by Internet. As mentioned before in chapter 4, the audit team did not find information on the calculation of the final grade. With this exception, the programme regulations are perceived to be well defined.

Criterion 7.2 Diploma Supplement and Certificate

Evidence:

- Draft of the Diploma Supplement provided as Appendix 15 of the Self-Assessment-Report

Preliminary assessment and analysis of the peers:
KazNPU has provided a multilingual draft of its Diploma Supplement in the appendices of theself-assessment report. This draft rather fulfils the function of a transcript of records, listing in detail the academic records of students. In this form, the Diploma Supplement does not meet the ASIIN-requirements. The following points are missing:

- a description of the qualification (in terms of learning outcomes at programme-level), especially a clarification that these programmes lead to an educational-profiled qualification;
- an easily comprehensible chart of the Kazakh Education System or at least a description how the awarded qualification is embedded into this educational system;
- information on how the final grade is calculated;
- presentation of statistical data on the distribution of grades, to enable e.g. employers to assess the relative academic performance of students´.

With regards to the requirements of the ASIIN seal, the peers support a revision of the diploma supplement, since an easily understandable diploma supplement significantly increases the international comparability of the programmes and qualifications.

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

Due to the fact that the HEI did not deliver a revised diploma supplement the peers hold on their primary assessment and the respective recommendation.

Taking the statement of the HEI into account the peers assess criterion 7 to be partly fulfilled.

D Additional Documents

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

D 1. Easily comprehensible study plan for the Bachelor's programme in Mathematics

D 2. Clarification, in which modules which programming languages are taught.

D 3. Clarification how the final grade is calculated.

D4. Clarification if the module „Computer Networks, the Internet and multimedia technologies" in the master programme „Informatics and informatization of education" is identical to the module with the similar name in the preceeding Bachelor's programme.

E Comment of the Higher Education Institution (02.01.2015)

The institution provided a detailed statement as well as additional documents on the following issues:

1. Easily comprehensible study plan for the Bachelor´s programme Mathematics
2. Clarification in which modules which programming language are taught
3. Clarification how the final grade is calculated
4. Clarification if the module “Computer network, the internet and multimedia technologies” in the Master´s programme “Informatics and informatization of education” is identical to the module with the similar name in the preceeding Bachelor´s programme
5. Improved module handbook
6. The results of interviewing students concerning the quality of the educational service

F Summary: Peer recommendations (11.02.2015)

The peers recommend the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Mathematics	with requirements	n.a.	30.09.2020
Ma Mathematics (Educational Mathematics)	with requirements	n.a.	30.09.2020
Ma Physics (Actual problems of Modern Physics)	with requirements	n.a.	30.09.2020
Ma Informatics (Informatics and Informatization of Education)	with requirements	n.a.	30.09.2020

A) Accreditation with requirements

Requirements

For all degree programmes

A 1. (ASIIN 2.2) It has to be assured that the revised learning outcomes provided with the HEIs statement are fixed, published and accessible at least for students and the teaching staff.

A 2. (ASIIN 2.3, 3.1, 4) It has to be assured that the revised module descriptions provided with the HEIs statement are published and accessible for students and teaching staff.

A 3. (ASIIN 4, 7.2) The diploma supplement has to be revised according to the comments made in the accreditation report and handed out to students on a regular basis, providing information about the objectives, intended learning outcomes, the national educational system, structure and level of the degree, as well as about an individual's performance.

A 4. (ASIIN 3.3) Elective modules, enabling students to choose between different subjects, have to be introduced into the study programmes.

A 5. (ASIIN 6.1) A formal method of course based students´ feedback/evaluation has to be implemented to ensure the further development of the programmes.

For the Bachelor programme "Mathematics"

A 6. (ASIIN 1) The programme title has to be revised in order to make the educational profile of the programme clearly visible.

For the Master programme "Physics (Actual Problems of Modern Physics)"

A 7. (ASIIN 1) The programme title has to be revised in order to make transparent that the programme leads to a professional qualification in educating teachers for primary and secondary schools.

For the Master programme "Informatics (Informatics and Informatization of Education)":

A 8. (ASIIN 1) The programme title has to be revised in order to make visible that the programme leads to the qualification in educating teachers for primary and secondary schools.

Recommendations

For all degree programmes

E 1. (ASIIN 2.1, 2.5) It is recommended that the university educates more students at master´s and PhD-level in the respective subjects in order to meet future labour market needs.

E 2. (ASIIN 3.1) It is recommended that the conditions for academic student mobility are further developed, preferably already at the bachelor´s level.

E 3. (ASIIN 3.3) It is recommended that p*roject-based teaching* as an educational method, although visible, is strengthened.

E 4. (ASIIN 3.3) It is recommended that video-*based feedback* as an educational method is introduced.

E 5. (ASIIN 5.1, 5.2) It is recommended that the conditions for staff to participate in international academic research are actively developed further.

E 6. (ASIIN 5.1) It is recommended that the on-going developmental research should be enriched by evaluation research topics. This should become visible in the curricula of the master programmes.

For the Bachelor programme "Mathematics"

E 7. (ASIIN 2.6) It is recommended that special teaching methods for pupils with learning-disabilities (e.g. dyslexia) are included into the pedagogical modules.

E 8. (ASIIN 2.2) It is recommended that students´ experience in teaching pupils is strengthened.

E 9. (ASIIN 2.6) It is recommended that the linear algebra contents of the more advanced course „Algebra and Number Theory" are incorporated into the course on „Analytic Geometry“ in order to achieve the international standard basic course on "Linear Algebra and Analytic Geometry".

For the Master´s programme “Physics (Actual Problems of Modern Physics)”

E 10. (ASIIN 2.6) It is recommended that “Modern Optics” and “Laser Physics” are introduced into the curriculum.

For the Master´s programme “Informatics (Informatics and Informatization of Education)”

E 11. (ASIIN 2.6) It is recommended that topics like “Information Security”, “Big Data“ and „Mobile Computing“ are strengthened within the curriculum.

G Comment of the Technical Committees

Technical Committee 04- Informatics (12.03.2015)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discussed the procedure. The Technical Committee confirmed that the current curriculum leads to a teacher's qualification and the informatics content is not sufficient to justify the title "Master of Informatics". Therefore it rephrased requirement 8.

But even for a curriculum leading to a teacher's qualification the Technical Committee deemed the current trends of computer science as not sufficiently represented in the curriculum. It replaced recommendation 11 by a new requirement 9, addressing the lack of current subjects of computer science.

Furthermore the Technical Committee made minor editorial amendments to the wording of recommendation 3 and 6.

The Technical Committee 4 – Informatics recommends the award of the seals as follows:

Degree Programme	ASIIN seal	Subject-specific labels	Maximum duration of accreditation
Ma Informatics (Informatics and Informatization of education)	With requirements	n.a.	30.09.2020

Requirements

A 8. (ASIIN 1) The informatics content is not sufficient to justify the title "Master of Informatics". Therefore the programme title has to be revised in order to make visible that the programme leads to the qualification in educating teachers for primary and secondary schools.

A 9. (ASIIN 2.6) Some current subjects of computer sciences must be reflected in the curriculum.

Recommendations

E 3. (ASIIN 3.3) It is recommended that p*roject-based teaching* as an educational method is strengthened.

E 6. (ASIIN 5.1) It is recommended that the on-going developmental research should be enriched by research topics regarding teaching evaluation. This should become visible in the curricula of the master programmes.

Technical Committee 12- Mathematics (09.03.2015)

Assessment and analysis for the award of the ASIIN seal:

Regarding requirement four, the technical committee thinks it should be stressed that the requested elective modules should relevant for the final score. In so far they modify the resprective requirement as follows

Elective modules with creditpoints, enabling students to choose between different subjects, have to be introduced into the study programmes.

Regarding the Bachelor Mathematics a minority thinks that a professional qualification as a teacher for primary and secondary schools can´t be reached in one study program. In the case at hand they doubt that the imparted competences prepare the students for a function as a teacher in a primary school. In so far they argue for a clear distinction between both profiles. In contrast the majority refers to the lacking comparability to similar study programs in Germany. In Kazakhstan the joint education of teachers for primary and secondary schools is a common approach. Not at least because in other fields, like the credit point system, cultural caused deviations are accepted, they utter against this claim. Nevertheless they think the specific educational profile of the Bachelor Programme should be made more transparent. In so far they modify the respective requirement six as follows:

The programme title has to be revised in order to make transparent that the programme leads to a professional qualification as a teacher for primary and secondary schools.

In addition the technical committee recommends minor editorial modifications.

The technical committee 12 – Mathematics recommends the award of the seal as follows

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditaiton**
Ba Mathematics	with requirements	n.a.	30.09.2020
Ma Mathematics (Educational Mathematics)	with requirements	n.a.	30.09.2020

Requirements

A 1. (ASIIN 2.2) It has to be assured that the revised learning outcomes provided with the HEIs statement are fixed, published and accessible for students and the teaching staff.

A 4. (ASIIN 3.3) Elective modules with creditpoints, enabling students to choose between different subjects, have to be introduced into the study programmes.

For the Bachelor programme "Mathematics"

A 6. (ASIIN 1) The programme title has to be revised in order to make transparent that the programme leads to a professional qualification as a teacher for primary and secondary schools.

Technical Committee 13- Physics (10.03.2015)

Assessment and analysis for the award of the ASIIN seal:

The technical committee discusses the procedure. All in all, it deems the assessment of the peers as well as the proposed requirements and recommendations adequate. The committee thinks that the requirements and recommendation could be an effective appeal for the further development of the study programs, not at least in an international framework.

Concerning recommendation 10, the technical committee suggests a slight modification: Due to the fact that "modern optics" and "laser physics" are essential parts of modern physics, the committee thinks, the consideration of these parts in the curriculum should be at least "strongly" recommended.

The technical committee 13 – Physics recommends the award of the seal as follows

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ma Physics (Actual Problems of Modern Physics)	with requirements	n.a.	30.09.2020

Recommendations

For the Master´s programme "Physics (Actual Problems of Modern Physics)"

E 10. (ASIIN 2.6) It is strongly recommended that "Modern Optics" and "Laser Physics" are introduced into the curriculum.

H.Decision of the Accreditation Commission (27.03.2015)

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

The Accreditation Commission discusses the procedure:

Regarding the introduction of elective modules into the study programs the accreditation commission deems, that the specific wording gives the false impression that right now the HEI does not offer any elective modules at all. Nevertheless the accreditation commission thinks that within the subjects the students should have more chances to develop specific profiles. Therefore the accreditation commission decides to replace the respective requirement 4 by the recommendation “It is recommended to offer additional elective modules allowing students to develop specific profiles”.

Due to the fact that in all study programs the grade Bachelor respectively Master of Education is awarded the accreditation commission deems, that the educational approach of the study programs is stressed sufficiently. Therefore it decides to eliminate the requirements 6 for the Bachelor “Mathematics” and 8 for the Master “Informatics and Informatization of Education” without substitution. Regarding the Masters Program “Actual Problems of modern Physiks” the accreditation commission nevertheless thinks that the program name should be generally reconsidered. Therefore it decides to transform requirement 7 to the more general recommendation: “It is recommended to re-consider the name of the program”.

Regarding the recommended extension of the Masters “Informatics and Informatization of education” curriculum the accreditation commission reformulates the respective recommendation as follows: “It is recommended to further enrich the curriculum with modern topics for informatics”.

The accreditation commission deems it to be difficult to generally recommend the education of more students of a specific level. Therefore it deletes the respective recommendation without substitution.

Concerning the recommended switch of the linear algebra content from the Bachelor “Mathematic”-course “Algebra and Number Theory” into the course “Analytic Geometry” the accreditation commission asks whether it is appropriate to suggest a change of the curriculum in such detailed questions. Finally it decides to delete the respective recommendation without substitution.

Furthermore the accreditation commission makes editorial modifications.

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

Degree Programme	ASIIN seal	Subject-specific labels	Maximum duration of accreditation
Ba Mathematics	With requirements	n.a.	30.09.2020
Ma Mathematics (Educational Mathematics)	With requirements	n.a.	30.09.2020
Ma Physics (Actual problems of Modern Physics)	With requirements	n.a.	30.09.2020
Ma Informatics (Informatics and Informatization of Education)	With requirements	n.a.	30.09.2020

Requirements

For all degree programmes

A 1. (ASIIN 2.2) It has to be assured that the revised learning outcomes provided with the HEIs statement are fixed, published and accessible at least for students and the teaching staff.

A 2. (ASIIN 2.3, 3.1, 4) It has to be assured that the revised module descriptions provided with the HEIs statement are published and accessible for students and teaching staff.

A 3. (ASIIN 4, 7.2) The diploma supplement has to be revised according to the comments made in the accreditation report and handed out to students on a regular basis, providing information about the objectives, intended learning outcomes, the national educational system, structure and level of the degree, as well as about an individual's performance.

A 4. (ASIIN 6.1) A formal method of course based students´ feedback and evaluation has to be implemented to ensure the further development of the programmes.

Recommendations

For all degree programmes

E 1. (ASIIN 3.1) It is recommended that the conditions for academic student mobility are further developed, preferably already at the bachelor´s level.

E 2. (ASIIN 3.3) It is recommended that p*roject-based teaching* as an educational method is strengthened.

E 3. (ASIIN 3.3) It is recommended that video-*based feedback* as an educational method is introduced.

E 4. (ASIIN 5.1, 5.2) It is recommended that the conditions for staff to participate in international academic research are further developed.

E 5. (ASIIN 5.1) It is recommended that the on-going research and development should be enriched by research topics regarding teaching evaluation. This should become visible in the curricula of the master programmes.

E 6. (ASIIN 3.3.) It is recommended to offer additional elective modules allowing students to develop specific profiles.

For the Bachelor programme "Mathematics"

E 7. (ASIIN 2.6) It is recommended that special teaching methods for pupils with learning-disabilities (e.g. dyslexia) are included into the pedagogical modules.

E 8. (ASIIN 2.2) It is recommended that students´ experience in teaching pupils is strengthened.

For the Master´s programme "Physics (Actual Problems of Modern Physics)"

E 9. (ASIIN 2.6) It is strongly recommended that "Modern Optics" and "Laser Physics" are introduced into the curriculum.

E 10. (ASIIN 1) It is recommended to re-consider the name of the program.

For the Master´s programme "Informatics (Informatics and Informatization of Education)"

E 11. (ASIIN 2.6) It is recommended to further enrich the curriculum with modern topics of informatics.

I. Fulfilment of Requirements (08.04.2016)

For all degree programmes

A 1. (ASIIN 2.2) It has to be assured that the revised learning outcomes provided with the HEIs statement are fixed, published and accessible at least for students and the teaching staff.

First Treatment	
Peers	Fulfilled Justification: The overall learning outcomes are published on the HEIs Website.
TC 04	Fulfilled Justification: The overall learning outcomes are published on the HEIs Website.
TC 12	Fulfilled Justification: The overall learning outcomes are published on the HEIs Website.
TC 13	Fulfilled Justification: The overall learning outcomes are published on the HEIs Website.
AC	Fulfilled Justification: The overall learning outcomes are published on the HEIs Website.

A 2. (ASIIN 2.3, 3.1, 4) It has to be assured that the revised module descriptions provided with the HEIs statement are published and accessible for students and teaching staff.

First Treatment	
Peers	Partly fulfilled Justification: Module descriptions and study plans are meanwhile accessible in the Internet. Nevertheless there are still several typing errors and inconsistencies in terms of the examination form. The peers recommend a respective indication in the decision letter.
TC 04	Fulfilled Justification: The technical commitee follwos the assessment of the

	peers.
TC 12	Partly fulfilled Justification: Module descriptions and study plans are meanwhile accessible in the Internet. Nevertheless there are still several typing errors and inconsistencies in terms of the examination form. The detected shortcomings in the module descriptions should be indicated in the decision letter.
FA 13	Partly fulfilled Justification: Module descriptions and study plans are meanwhile accessible in the Internet. Nevertheless there are still several typing errors and inconsistencies in terms of the examination form. The detected shortcomings in the module descriptions should be indicated in the decision letter.
AC	Partly fulfilled Justification: Module descriptions and study plans are meanwhile accessible in the Internet. Nevertheless there are still several typing errors and inconsistencies in terms of the examination form. The AC decides to address the detected shortcomings in the module descriptions in the decision letter.

A 3. (ASIIN 4, 7.2) The diploma supplement has to be revised according to the comments made in the accreditation report and handed out to students on a regular basis, providing information about the objectives, intended learning outcomes, the national educational system, structure and level of the degree, as well as about an individual's performance.

Erstbehandlung	
Peers	Partly fulfilled Justification: The HEI provided diploma supplements for the Bachelor and Masters programs Mathematics. These documents are in line with European standards. For the other degree programs subject specific diploma supplements are missing.
TC 04	Not fulfilled (Master Informatics) Justification: A subject specific diploma supplement is missing.
TC 12	Fulfilled Justification: For the Ba/Ma Mathematics a subject specific diploma supplement is available
TC 13	Not Fulfilled

	Justification: As the HEI indicated in February that subject specific diploma supplements should be developed in a medium term the technical committee assesses requirement three for the Master Physics under the precondition to be fulfilled that a subject specific diploma supplement will be submitted not later than eight weeks after the receipt of the final decision of the accreditation commission.
AC	Fulfilled (Ba/Ma Mathematics)/ not fulfilled (Ma Informatics, Ma Physics) Justification: As for the Master Physics and the Master Informatics subject specific diploma supplements are still missing the accreditation commission assesses the respective requirement 3 for these study programs *by now* to be not fulfilled. Thereby it takes the anticipatory resolution to prolong the accreditation immediately, without any further treatment, when the HEI presents revised subject specific diploma supplements for these study program as well *Remark: On May 25th the HEI submitted the missing diploma supplements for the Masters programs Informatics and Physics. According to the anticipatory resolution of the accreditation commission requirement 3 is thereby for both programs fulfilled.*

A 4. (ASIIN 6.1) A formal method of course based students´ feedback and evaluation has to be implemented to ensure the further development of the programmes.

Erstbehandlung	
Peers	Fulfilled Justification: In 2015 a first survey amongst last year students has been conducted. The results and derived measures are documented. According to the HEIs statement the survey should be repeated on a regular basis.
TC 04	Fulfilled Justification: In 2015 a first survey amongst last year students has been conducted. The results and derived measures are documented. According to the HEIs statement the survey should be repeated on a regular basis.
TC 12	Fulfilled Justification: In 2015 a first survey amongst last year students has been conducted. The results and derived measures are documented. According to the HEIs statement the survey should be repeated on a regular basis.

TC 13	Fulfilled Justification: In 2015 a first survey amongst last year students has been conducted. The results and derived measures are documented. According to the HEIs statement the survey should be repeated on a regular basis.
AC	Fulfilled Justification: In 2015 a first survey amongst last year students has been conducted. The results and derived measures are documented. According to the HEIs statement the survey should be repeated on a regular basis.

The Accreditation Commission for degree programs decides the prolongation of the accreditation as follows:

Degree Programme	**ASIIN seal**	**Subject-specific labels**	**Maximum duration of accreditation**
Ba Mathematics	All requirements fulfilled	n.a.	30.09.2020
Ma Mathematics (Educational Mathematics)	All requirements fulfilled	n.a.	30.09.2020
Ma Physics (Actual problems of Modern Physics)	All requirements fulfilled	n.a.	30.09.2020
Ma Informatics (Informatics and Informatization of Education)	All requirements fulfilled	n.a.	30.09.2020