ASIIN Accreditation Report

Bachelor's Degree Programmes

Electrical Power Engineering
Instrument Engineering

Master's Degree Programme
Electrical Power Engineering

offered by
North-Kazakhstan State University named after Manash Kozybayev

Last update: 27.09.2013

Basic information about the accreditation procedure

Degree programmes	**Bachelor's Degree programmes in** • ***Electric Power Engineering*** • ***Instrument Engineering*** **Master's Degree programme in** • ***Electrical Power Engineering***
Higher Education Institution	**North-Kazakhstan State University named after Manash Kozybayev**
Seals applied for	The Higher Education Institution has applied for the following seals and labels: • ASIIN Seal for the degree programmes • EUR-ACE label
Peer panel	Prof. Dr. Madhukar Chandra, Technical University of Chemnitz Prof. Dr.-Ing. Christoph Rappl, Deggendorf University of Applied Sciences Dr.-Ing. Klaus-Jürgen Wilhelm, formerly ABB Askhat Zhilkaidarov, Student SKSU by M. Auezov, Shymkent, Kasachstan and University of Applied Sciences Hamburg <u>External observer on behalf of the Kazakhstan accreditation bodies:</u> Andrey Petrovich Koval, Director of the Center for Economic Research of Kostanay State University
ASIIN Procedure Manager	Dr. Siegfried Hermes
On-site visit	The on-site visit took place on April 17 – 18, 2013.

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A Preliminary Remark

The on-site visit for the Bachelor's degree programmes Electrical Power Engineering and Instrument Engineering as well as the Master's degree programme Electrical Power Engineering took place at North Kazakhstan State University named after Manash Kozybayev in Kazakhstan on 17 and 18 April, 2013.

Prior to the talks with the representatives of the university, the peers met to prepare their questions and to discuss the self-assessment report. Prof. Dr. Madhukar Chandra was asked to act as speaker of the audit team for the aforementioned degree programmes. ASIIN's Technical Committee 02 – "Electrical Engineering and Information Technology" is responsible for the accreditation procedure of these programmes.

The peers held discussions with the following groups: University management, responsible managers of degree programmes, teaching staff, students, graduates, and representatives of cooperating companies.

Additionally, the auditors inspected the infrastructure and the technical equipment at North-Kazakhstan State University.

The following chapters relate to the Self Evaluation Report (hereafter SER) provided by the North Kazakhstan State University named after Manash Kozybayev in February 2013 as well as to the discussions during the on-site visit and the information provided there, including samples of exams and final theses.

The assessment and the award of the ASIIN-seal are always based on the European Standards and Guidelines (ESG) and the Subject-Specific Criteria of Technical Committee 02 – Electrical Engineering and Information Technology, valid at the time of conclusion of the contract. In case of the award of other seals or labels, the criteria of the respective seal or label-owner (here ENAEE) are considered additionally.

As owner of the label ENAEE has authorized ASIIN to award the EUR-ACE® Label based on the „EUR-ACE Framework Standards for the Accreditation of Engineering Programmes". The assessment for the award of the EUR-ACE® Label is based on the General Criteria of ASIIN as well as on the Subject-Specific Criteria (SSC) of the Technical Committee 02 – Electrical Engineering and Information Technology.

The report has the following structure: Chapter B presents the facts which are necessary for the assessment of the requested seals. The information principally stems for the self-assessment report and related appendices provided by the Higher Education Institution. An analysis and

separate assessments of the peers about the compliance with the criteria for the requested seals follow. The assessment of the peers is preliminary and subject to changes based on the subsequent information. The statement of the HEI is included with the exact wording. The final recommendation of the peers is drafted after and based on the statement of the HEI (and additional documents, if applicable). The Technical Committee makes a proposal for the accreditation decision (chapter F). The final decision is taken by the Accreditation Commission for Degree Programmes (chapter G).

Any gender-specific terms used in this document apply to both women and men.

B Description of the degree programmes

B-1 Formal specifications

a) Name & Awarded Degree	d) Study-Mode	e) Programme Duration & Credit points	f) first & annual enrollment	g) expected intake	h) fees
Instrument Engineering / Bachelor of Technics and Technology	full time	4 years / 240 ECTS	autumn semester / autumn semester 2004	47	1831 EUR p.a. (91% state grant; 9% on contract base)
Electric Power Engineering / Bachelor of Technics and Technology	full time part time	4 years / 240 ECTS 4 years / 180 ECTS	autumn semester / autumn semester 2004	81 73	1831 EUR p.a. (32% state grant; 68% on contract base)
Electric Power Engingeering / Master of Technical Sciences Master of Engineering	full time scientific and pedagogical direction profile direction	2 years / 120 ECTS 1 year / 60 ECTS 1,5 years / 90 ECTS	autumn semester / autumn semester 2008	2 1	2104 EUR p.a.

Analysis of the peers:

In general, the name of the respective study programme reflects the study aims and learning outcomes the HEI has committed itself to. Also, the name, by and large, reflects the disciplinary content of the resp. study programme, though “instrument engineering” doesn’t exactly equate to any regular German or English speaking programme title.

Awarded degree, expected intakes per study year and tuition fees are within regular range.

Nonetheless, the study mode of the part time Bachelor’s programme Electric Power Engineering and the respective awarding of credit points have been discussed intensively during the audit discussions. Firstly, the identical duration of the part-time and full-time version of the Bachelor’s programme seems to be at odds with what would have been normally expected (longer duration of the part time study programme). Not surprisingly then, this study mode of the Bachelor’s programme is awarded less credit points (180 ECTS as against 240 ECTS), while at the same time aiming at much the same learning objectives as does its full-time counterpart. According to the HEI, this directly results from the de facto acknowledgement of skills and competences of the first study year having been achieved at any other HEI in Kazakhstan. As to the Master’s programme Electric Power Engineering, representatives of the HEI in detail described the national graduate education strategy foreseeing an either research and pedagogical oriented or a profession oriented approach (profile oriented). Whether

choosing the one year or the 1,5 year curriculum of the Master's programme in profile direction depends on the applicants demands in deepening his professional knowledge or, otherwise, on his preceding basic knowledge.

Assessment of Peers; ASIIN criterion 1:

The peers thought the relevant items of the above mentioned criterion to be largely fulfilled. The awarding of a different number of credits points for an essentially identical qualification profile in the full-time and part-time Bachelor's programme Electric Power Engineering seemed confusing to the peers. They judged it necessary to ensure that, since they convey essentially the same competences, the part-time and the full-time study mode must be credited with the same ECTS credits share.

B-2 Degree Programme: content concept & implementation

B-2.1 Objectives of the degree programmes

According to the HEI **study aims** of the degrees are as follows:

According to SER, state and private enterprises and organisations in mechanical engineering, metallurgy, transport, telecommunications, science and education, medicine, agriculture, economics and business are objects of Instrument Engineers' professional work. In the Bachelor's programme Instrument Engineering graduates should be prepared for

- service and maintenance of technical means of automation and information, development and implementation of optimal technology of their manufacture, their metrological calibration, standardization and certification;
- development, design, simulation and implementation of automation projects, information of production processes, taking into account energy, technological, operational, ergonomic and economic indicators;
- analytical and experimental work and studies for the diagnosis and assessment of components and processes.

Practical training in the Bachelor's programme Electric Power Engineering (*full-time* and *part-time*) is taking place in factories of generation, transmission, distribution and consumption of electricity. According to SER, professional training in the educational programme is directed to modernization, design and operation of electrical projects:

- power plants and substations;
- electrical systems and networks;
- relay protection and automation of power systems;
- electricity supply of companies;

- alternative and renewable energy resources;
- electromechanical, electrical insulation and cable technology;
- electro-technical installations and systems;
- lighting and light sources;
- electrical equipment of vehicles;
- electric drive and automation of complexes.

Practical training in the Master's programme Electric Power Engineering (*scientific and pedagogical* as well as *profile direction*) is conducted in institutions of higher and postgraduate education, research and design / construction organisations and enterprises of production, transmission, distribution and consumption of electricity. Professional work of graduates should include

- theoretical and experimental studies on the problems of electric power industry;
- modelling of static and dynamic processes;
- pedagogical and educational activities;
- management and organisation of the divisions of the enterprise dealing with production, transmission, distribution and consumption of electricity.

The HEI explicitly points to a "culture of inclusion" with regard to the training objectives and results of educational programmes that are defined and adjusted by a special commission, with all stakeholders involved: head of department, representatives of employers, educators and students. SER further states that before approval all educational programmes are open to discussion within the department and the university as a whole. Within ten days, all interested persons may submit proposals for the adjustment of learning objectives and outcomes. After discussing the proposals, the commission claims learning outcomes of educational programmes.

The above mentioned **objectives** for the study programmes are accessible to students and other stakeholders on the homepage of the HEI.

Analysis of the peers:

The HEI has duly classified the final degree in academic and professional terms. The differentiation of the Bachelor's respective Master's level of education in the light of, for instance, the European Qualifications Framework is understandable as are the fields of professional work of graduates which have been mentioned in SER respectively. The objectives of the degree programmes are accessible to students, lecturers and other stakeholders.

Assessment of Peers; ASIIN-Criterion 2.1:

The peers judged the above mentioned criterion as adequately met.

B-2.2 Learning outcomes of the degree programmes

The HEI states the **intended learning outcomes** as follows:

For the Bachelor's programme Instrument Engineering: By completion of their studies graduates should have

- knowledge of theoretical principles of electrical engineering and ability to design, analyse and calculate the principle electric circuits of devices and systems;
- knowledge of the principles of processing streams of information data and ability to use automatic systems of design and modelling in engineering practice;
- knowledge of basic principles and methods of measurement variables and ability to exercise choice of means of measurement, control and management of research activities;
- knowledge of modern methods of investigation and design of devices and systems;
- knowledge of devices, the operating principles and the use of elements and nodes of modern instrumentation and ability to design devices and systems on structural and elementary levels;
- knowledge of the basic technological processes of production cycles, devices and systems, knowledge of preparation of technical and technological documentation [regarding] the development of new products;
- knowledge of theoretical principles of automatic control systems, ability to solve basic and typical problems of automation processes [and to] use effective methods of automatic control in the management of production facilities;
- knowledge of basic economic categories and principles of organisation of production and ability to analyse the economic indicators of production;
- knowledge of the necessary measures to ensure life and environment safety during production and operation of devices and systems;
- practical skills of assembly, installation and design of electrical unites and electrical equipment;
- fluency in the official language, the language of interethnic communication, and one foreign language to provide information and documentation;
- possession of elements of spiritual, aesthetic and ethical culture;
- knowledge of legal, moral and ethical standards in the field of professional activity;
- ability to express in writing or orally their ideas and solutions to problems;
- knowledge of a healthy lifestyle.

For the Bachelor's programme Electric Power Engineering *(full-time* and *part-time*): By completion of their studies graduates should have

- knowledge of the theoretical foundations of electrical engineering, ability to design, analyse and calculate the principle electric circuits of electrical networks, relay protection and automation, ability to use automated systems for the design of electric power systems, knowledge of the theoretical and experimental research methods in order to create new equipment;
- knowledge of the theoretical foundations of electronics, automation and insulating equipment, understanding the modern state of electrical equipment of electric power systems, ability to analyse, calculate and choose the basic units and components of electrical equipment;
- knowledge of basic principles of device operation and maintenance of electricity networks, systems, and power supply facilities, possession of the theoretical and experimental research methods in order to create new equipment and processes;
- knowledge of promising directions of development of electric power systems, automation and relay protection, knowledge of the necessary measures to ensure the safety of life during manufacturing, construction and operation of power systems, skills regarding choice of equipment in control systems, switchgear, wire and cable products;
- knowledge of basic economic categories and principles of organisation of production, ability to analyse the economic indicators of production;
- knowledge of the necessary measures to ensure the safety of life and the environment during production, construction and operation of electric power systems;
- ability to organize work in accordance with applicable law, to apply the normative documents for the design and operation of power facilities;
- practical skills of assembly, installation and design of electrical units and electrical equipment;
- fluency in the official language, the language of interethnic communication, and one foreign language to provide information and documentation;
- possession of the elements of spiritual, aesthetic and ethical culture;
- knowledge of legal, moral and ethical standards in the field of professional activity;
- ability to express in writing or orally their ideas and solutions to problems;
- knowledge of a healthy lifestyle.

For the Master's programme Electric Power Engineering: By completion of the *scientific and pedagogical direction* of the study programme, graduates should have

- knowledge of the basic laws of science and technology in the field of electric power, scientific and technical problems in the field of electric power engineering;
- knowledge of mathematical models and methods for in-depth analysis of scientific calculations and optimization of determinate and random processes and phenomena in electric power systems, skills of analysis and application of mathematical modeling in the study and design-planning of electric power systems;
- knowledge of the methods of the experiment in electric power devices and systems, ability to plan and conduct experiments in electric power units, ability to use modern

information technologies for research, development and operation of facilities and systems in the field of electric power;

- knowledge of the perspective directions of development of electric power industry, ability to use modern systems of data collecting and processing when performing experiments;
- knowledge of a foreign language to the extent necessary to obtain information of professional content from foreign sources;
- public speaking skills, argumentation skills, debate and controversy conducting skills, skills in practical analysis of various kinds of logic reasoning;
- possession of the culture of communication, knowledge of moral and ethical standards in the professional field;
- skills of logical and analytical thinking in solving problems and their proper documentation.

Profession-oriented study mode graduates should have at their disposal

- knowledge of the basic laws of work with personnel in electric power engineering, theoretical features of experiments in the field of electric-power engineering;
- knowledge of the promising areas of electric-power engineering development, ability to use modern information and computer technologies in conducting technical experiments, ability to use advanced processing and data collection systems conducting technical experiments;
- knowledge of the methods of experiments in electric power devices and systems, ability to plan and conduct experiments in electric power units, ability to use modern information technologies for research, development and operation of facilities and systems in the field of electric power engineering;
- knowledge of principles of organisational and economic activities in the electric power production, adjustment and operation skills for electric power equipment;
- knowledge of a foreign language to the extent necessary to obtain information of professional content from foreign sources;
- public speaking skills, argumentation skills, debate and conflict management skills, skills in practical analysis of various kinds of logic reasoning.

The **learning outcomes** for the study programmes, as defined above, are accessible to students and other stakeholders on the homepage of the HEI.

Analysis of the peers:

Principally, the intended learning outcomes correspond to the defined study objectives, the title of the respective study programme and, last not least, to the level of qualification sought. They convey an impression of qualification profiles which also largely reflect the ASIIN Subject Specific Criteria (SSC) of the respective Technical Committee – Electrical Engineering and Information Technology.

Otherwise, with respect to the Bachelor's and Master's programmes Electric Power Engineering some of the defined learning outcomes are explicitly aimed at future developments of the discipline and fields of research without insofar being backed by the curricular content of the respective programmes (for instance, the wireless world and antenna related questions are appropriate examples). That way, for instance, one of the learning results in the Bachelor's programme Electric Power Engineering reads as follows: "knowledge of promising directions of development of electric power systems, automation and relay protection", and in a similar vein the list of the intended learning outcomes of the Master's programme in its scientific and pedagogical direction registers "knowledge of the perspective directions of development of electric power industry".

The HEI convincingly pointed out that the relevant stakeholders (university, departments, lecturers, students, companies and other interested parties) have been and will be successfully integrated in the process of defining the study objectives and learning outcomes of the programmes under consideration and, thus, on equal part contribute to the further development of those programmes. Seemingly, the quality assurance framework established thus far promotes the periodic assessment and, if necessary, adaptation of the conceptual approach, curricular content and intended objectives taking into account internal and/or external demands.

The learning outcomes for the said programmes are – as has been proved – accessible to the relevant stakeholders, particularly lecturers and students, in a way that students are able to appeal to them (for example in the scope of the internal quality assurance system).

Assessment of Peers; ASIIN-Criterion 2.2:

The peers deemed the relevant aspects of the said criterion largely, but not yet fully met. They punctuated that those learning outcomes aiming at future developments in different subject areas and the respective curricular content need to be consistent or adjusted accordingly.

B-2.3 Learning outcomes of the modules/module objectives

The **objectives of individual modules** are published in the form of intended learning outcomes (subdivided into knowledge, skills and competences). These module descriptions are sampled in so called module catalogues and are available to the stakeholders via internet. The students confirmed that they have access to the module descriptions.

Analysis of the peers:

It is to be acknowledged that the module descriptions are aimed at giving a reasonable idea of how the learning outcomes stated for the individual degree programmes have been systematically translated into learning outcomes on the module level in the sense of

knowledge, skills and competences. And furthermore, how these combined learning outcomes are operated in the respective curriculum. However, these efforts have been flawed by packing up modules in the proper sense in what might be called “container modules”, comprised of a row of teaching / learning units (i.e. the modules in the proper sense) which are thematically related. Looking, for example, at the “modules” Fundamentals of Mathematics and Natural Sciences or Physico-chemical properties of materials in the Bachelor’s programme Electrical Power Engineering, the “module” Basics of devices and systems engineering and informatization in the Bachelor’s programme Instrument Engineering, and the “module” Mathematical Support of the Experiment in the Master’s Programme Electric Power Engineering, the model study plan refers to each of them as a superordinated category of affiliated teaching / learning components which apparently in themselves serve as the reference “modules” in the more familiar Bologna terminology. This impression is confirmed when considering the examination schedule, which also relates the exams to these smaller teaching / learning units now comprised in summary descriptions of content rich module blocks. If this is the correct understanding of the module conception standing behind the curricula under consideration, the actual “module” descriptions do not reflect their proper module reference, but, on the contrary, are blurring these basic units. As a result, it is hardly possible to identify the learning outcomes for each of these units/modules (since there are almost entirely undifferentiated summaries of module objectives), and much the same applies for the individual unit / module content, its assumed students’ workload and allocated ECTS credits as well as the indication of the different forms of class respective self study hours.

Moreover, the nomination of the units, the HEI now calls “modules”, seems to vary in many cases in the “Modular Directory” and the Model Study Plans. This might be, of course, due to deficits of the English translation. But since the presentation and documentation of the study programmes in the English language form part of an international outlook of the HEI’s strategy – being confirmed by the accreditation procedure under way – it will be necessary to provide for a complete and consistent documentation in English as well.

Students confirmed that the module descriptions are fully accessible to them via Internet but also paper based. Moreover, it appeared that students make good use of the descriptions in study planning and preparation of lectures.

Assessment of Peers; ASIIN-Criterion 2.3:

The peers considered the requirements of the above cited criterion not fully met. With respect to the deficits referred to above, they deemed it indispensable to update the course descriptions accordingly. Descriptions of a representative sample of electives at a minimum have to be incorporated additionally.

Assessment for the award of the EUR-ACE® Label:

The peers deemed the intended learning outcomes of the degree programmes under review in accordance with the engineering specific part of Subject-Specific Criteria of the Technical Committee Electrical Engineering and Information Technology. They considered the learning outcomes in the categories „Knowledge and Understanding“, „Engineering Analysis“, „Engineering Design“, „Investigations“, „Engineering Practice“ und „Transferable Skills“ sufficient to meet the requirements of the “Framework Standards ...” which govern the eligibility for awarding the EUR-ACE® Label.

B-2.4 Job market perspectives and practical relevance

According to the SER **employment opportunities** for graduates of the programmes under scrutiny are manifold. The HEI already accurately monitors the employment rates of graduates; tables of employment rates of the respective study programmes in the period 2010-2012 illustrate that practically all graduates get employed very soon after having finished their studies. In this respect it is noteworthy that the HEI takes considerable efforts to support students in finding adequate positions in the labor market. As to that SER lists, inter alia, the following steps and instruments:

- Academic mobility and career center (AMCC) develops a general plan of the University in employment. Implied in the employment plan are the following activities:
- *department level:* search for organisations interested in graduates, assistance in the direction of students to the organisations for practice with subsequent employment, conduct of supervisory hours on the topic of employment, establishing links with graduates of previous years, sending letters to potential employers with proposals for further cooperation, keeping records on employment of graduates and reporting to the AMCC;
- *the deanery level:* arrangement of the gatherings of Alumni, arrangement of job fairs with invitation of potential employers;
- AMCC *level:* work with the centers and employment agencies of the North-Kazakhstan region and the Republic of Kazakhstan, preparation of order about the distribution of graduates and report to the Ministry of Education and Science, creation of a unified information base on the availability of vacancies from employers and placement of graduates resumes, conduct of seminars on methodological positioning of graduates on the labor market;
- *service of quality management level:* development of questionnaires, together with the departments, to measure consumers' satisfaction; setting-up a questionnaire on consumers' satisfaction.

Reportedly, the demand for graduates of the Bachelor’s Programme Instrument-Engineering is high, because in the Republic of Kazakhstan, in accordance with the programme of industrial-innovative development, industrial, medical and educational facilities, infrastructure objects, etc. are being constructed and opened. Hence, graduates are employed in such enterprises as

"JSC Factory named after S.M. Kirov", JSC "Petropavlovsk Heavy Machine Building Plant", North-Kazakhstan regional telecommunications directorate – branch of JSC "Kazakhtelecom", etc.

According to SER, the implementation of the state policy in the energy sector in the region has increased the need for professionals on the Bachelor's Programme Electric Power Engineering. Graduates work at the leading enterprises in production and transportation of electricity: JSC "North-Kazakhstan Electricity Distribution Company", JSC "Akmola Electricity Distribution Company", JSC "SevKazEnergoEkspertiza", etc. Increased demand for graduates is from the HEI's perspective related to the increased necessities of energy users and the use of modern methods of electricity transporting. Generally, growth of industrial production causes increased demand for electric power industry professionals.

Graduates of the Master's programme Electric Power Engineering are in positions, inter alia, as teachers at North-Kazakhstan State University named after M. Kozybaev and at the State Institution "Professional Lyceum № 2" in Petropavlovsk. Others work in such organisations as JSC "North-Kazakhstan Electricity Distribution Company", North-Kazakhstan and Pavlodar oblast directorate of telecommunications – branches of JSC "Kazakhtelecom", the Joint Stock Company "Omsk-Energo" (Russia) and Ltd "Petropavlovskelectromontazh".

SER states that students' practice is one of the most important and compulsory forms of the educational process, intended to consolidate and deepen the theoretical knowledge, the acquisition of skills of independent work, and allowing students to assess the level of acquired competences. As forms of practical training SER notes the following:

Bachelor's programmes

- *Educational practice*: carried out in order to make students familiar with the primary concepts of technology, organisation of work at industrial enterprises;
- *Production practice*: carried out to consolidate the theoretical and practical knowledge acquired by students in the study of general and special subjects, study of job responsibilities, issues of economy, organisation and planning of production.
- *Pre-diploma practice*: carried out in enterprises, where it is possible to study materials related to the theme of the final qualification work of bachelors.

Master's programme

- teaching – at the organisation of education (practice equivalent to 3 ECTS);
- research – at the place of conducting the master thesis (practice equivalent to 12 ECTS);
- production (for master degree students of the profession oriented mode of education; practice equivalent to 5 to 10 ECTS).

SER states that the basis for practice consists of a bilateral agreement concluded between the university and the enterprise or organisation. Following SER, the management of practice is carried out on both sides: from the university – by qualified teaching staff, from the company or organisation – by the head of the company or by the leading specialists. Rights and duties of university, company and student are regulated in detail. The HEI provides a list with cooperating industrial enterprises.

Analysis of the peers:

The programme coordinators and lecturers and representatives of cooperating companies, who participate in the audit meetings, comprehensively prove that there is a significant demand on the labour market for graduates of the programmes possessing the respective qualifications profile. The overall impression is that the HEI maintains close contacts with many companies on a regional, national and international scale, thus providing manifold opportunities to carry out practical trainings as part of the curriculum, but also to engage in applied research cooperation with financial support or physical equipment provided by companies. Representatives of the companies also reported that they principally are free to suggest conceptual further developments of the programmes according to newly arising technological demands of the industry. They pointed to several subject areas like thermal technology and thermal heating, winding and cable-technologies and transmission lines, relay protection etc., where companies had suggested strengthening competences of graduates in order to better match the requirements of new technologies. When asked, companies judged the graduates of the said programmes as highly qualified. Graduates from their experience did not only reflect technical knowledge and competences but also soft skills which can be build upon and further developed in the company.

The practical training offered (projects, laboratories and placements) is appropriately linked to professional practice. In particular, practical training in industrial enterprises is supervised commonly by the HEI and the company.

Assessment of Peers; ASIIN criterion 2.4:

The peers concluded that, in general, the requirements of the above mentioned criterion are met sufficiently. In particular, they considered laboratorial experiments to be thoroughly well planned, conducted and supervised.

B-2.5 Admissions and entry requirements

Admission rules and entry requirements to the Bachelor's programmes are as follows: Applicants are supposed to possess knowledge to the extent of secondary school (gymnasium, lyceum, college), confirmed in a single national testing (SNT) or complex testing (CT). Single

national testing is performed by high school graduates, specialized high schools and lyceums of this year, and complex testing – by high school graduates, specialized high schools and lyceums of previous years. Applicants must have a leaving certificate of secondary schools and the certificate of the approved sample, confirming that he/she has passed the SNT or CT. Applicants to brief programmes must show a diploma of secondary professional school – a college and approved certificate confirming successful completion of CT (computer testing).The SNT or CT are held on four subjects: Kazakh or Russian (depending on the language of tuition), History of Kazakhstan, Mathematics and Physics. The number of test items for each subject is 25, each of which is estimated at one point. According to the results of testing, applicants must score at least 50 points, including at least 7 points in mathematics (the subject of a profile), and in other subjects at least 4 points. Applicants with the highest number of points are awarded, on a competitive basis, with State Educational Grants. Applicants who haven't succeeded in the competition, but reached the threshold score, may study on a payment basis.

Applicants to the *accelerated programmes* must submit a diploma of a college and the certificate of the approved sample, confirming that the applicant has passed complex testing.

Professional practice or experience is not required for the admission to the University. Knowledge of foreign languages is required to the extent of secondary schools (gymnasium, lyceum) and college education. Tests of professional competence are not provided.

Admission to the Master's programme is realized in accordance with the order of RK № 161 of 04.01.2008 "Model Regulations, admission to educational organisations that realize professional training programs of postgraduate education". The persons who have higher education are accepted to the Master's education. Admission to the Master's programme Electric Power Engineering is realized on a competitive basis, based on the results of entrance examinations. Applicants must take the following examinations:

- of foreign languages (English, French, German). Citizens of the Republic of Kazakhstan with a certificate of passing a test in a foreign language (English, French, German) such as: Test of English as a Foreign Language, Test of English as a Foreign Language Institutional Testing Program (TOEFL ITP), (TOEFL, a threshold point - no less than 560), International English Language Tests System (IELTS, a threshold point - at least 6.0), Grundbaustein DaF (threshold score - with 1), Deutsche Sprachprüfung für den Hochschulzugang (DSH, a threshold score – with 1), Diplome d'Etudes en Langue Français (DELF, a threshold score – a 2), Diplome Approfondi de Langue Français (DALF, the threshold point – C 1), test de connaisances de français (TCF, a threshold point - not less than 400) are exempted from the entrance examination to magistracy in a foreign language;

- on specialty.

Individuals who have mastered the curriculum of higher education as well as scored by the sum of entrance examinations on specialty and foreign language at least 8 points (4-point scale evaluation of knowledge in each discipline) are permitted for the enrollment to the study financed by the government (State Educational Grant).

Knowledge of a foreign language is an obligatory condition for the successful completion of master's educational programmes.

Transfer of students from one educational programme to another and from one institution to another is possible in accordance with the regulations of the government of the Republic of Kazakhstan № 110 19.01.2012 y "On approval of the rules of transfer and recovery of students according to the types of educational organisations", and at the end of at least one academic period. Positive preconditions for domestic exchanges are standardised curricula, in which the basic modules are the same for all universities in Kazakhstan. Transfer of students is carried out, if the difference in the curriculum is not more than five compulsory subjects.

Students can study some disciplines in other institutions of higher education, including overseas institutions. At the same time credits from other universities are recognized if a corresponding agreement between institutions of higher education has been signed. The University Academic Council determines the maximum number of credits permitted to study in other universities. For credit acceptance students are to submit their university transcript showing final grades and the number of credits mastered to the Registration Office.

[…] transfer from other universities and other specialties […] is realized by studying subjects with other streams of study groups and on condition of compatibility of curricula or, otherwise, in the summer (optional) semester. In this case, the student makes out a statement to conclude an agreement for the provision of additional paid services. The course of study is determined, during transfer […] of students, by taking into account the prerequisites. Acceptance of studied credits is realized according to the educational path needed for the mastering of appropriate educational programmes.

Analysis of the peers:

One of the issues discussed with the representatives of the HEI has been to what extent the admission requirements have an impact on the quality of the degree programme.

In that respect, the preparatory first year of the Bachelor's programmes can reasonably be characterised as a means to ensure that students meet the necessary prerequisites to achieve the intended objectives of the respective study programme. In conjunction with the provisions

applying to the transfer of students from one semester to the next, and those regulating the possibility of retaking exams ("eliminating academic debts", see below chapter 4) the HEI is aiming convincingly at supporting the students in achieving the intended learning outcomes. Generally, it can be concluded that the applicable regulations are transparent and accessible to all stakeholders involved.

As to the recognition of qualifications gained from other institutions of higher education, in particular abroad, the provision in place is, by and large, directed to grades, credits and content (subject). Comprehensibly, the provisions regulating the transfer of academic achievements require a valid learning agreement before going abroad in order to ensure that the selected modules at the other HEIs and subsequently the qualifications gained can be recognized. Nevertheless, there is no specific reference made to the qualifications or competences to be recognized, thus rendering these provisions not fully in accordance with the correspondent rules of recognition in the Lisbon Convention (see in particular: Section III "Convention on the Recognition of Qualifications concerning Higher Education in the European Union"). In principle, such regulations are meant to encourage and support the mobility of students as a pivotal part of this Convention.

In this context, the part-time model of the Bachelor's programme Electric Power Engineering with its 180 ECTS credits to be awarded in a four years study term apparently is also connected with the recognition of academic activities completed externally. As has been clarified in the audit discussions, the duration of the part time model is counter-intuitively much the same as the full-time model (but earns only 180 ECTS credits as opposed to 240 ECTS credits in the full-time model). While the part-time availability of students is being referred to with a reduced study plan, students de facto are commencing their studies in the third semester. Qualifications of the first study year have been achieved at another HEI and are recognized on a regular basis.

Assessment of Peers; ASIIN-Criterion 2.5:

The peers judged the said criterion as being addressed adequately in large parts, though not sufficiently yet. With regard to the recognition of activities completed at foreign HEIs or at institutions/learning environments other than HEIs they stated that rules for the recognition of activities have to be adopted especially with a view to internationalisation and, in particular, the mobility of students ("Lisbon Convention"). Considering the part-time model of the Bachelor's programme Electric Power Engineering, the peers deemed it necessary, that academic activities completed externally which are recognized on a regular basis and taken into account when fixing the individual study plan of part-time students should be adequately expressed in the number of ECTS credits to be awarded. This seems all the more imperative, as there are no distinct differences of intended learning outcomes between the two modes of study.

B-2.6 Curriculum/content

Curriculum of the Bachelor's Programme for Instrument Engineering:

1 semester	2 semester	3 semester	4 semester	5 semester	6 semester	7 semester	8 semester
Basics of Mathematics and Natural Sciences ECTS 24		**Basics of design and informatization of devices and systems ECTS 15**			**Circuit engineering solutions for the design of devices ECTS 16**	**Organization of production ECTS 3**	
Mathematics 1 **ECTS 5**	Mathematics 2 **ECTS 4**		Computer technologies **ECTS 4**		Elective discipline 1 **ECTS 5**	Economics and organization of production **ECTS 3**	
Chemistry **ECTS 3**	Physics 1 **ECTS 4**	Physics 2 **ECTS 5**	Algorithmization and programming **ECTS 3**		Elective discipline 2 **ECTS 3**		
Computer Science **ECTS 4**	Engineering and Computer Graphics **ECTS 3**	Applied Mechanics **ECTS 3**			Elective discipline 3 **ECTS 3**		
	Educational Practice **ECTS 1**				Practical Training 2 **ECTS 5**		
	State History ECTS 4	**Basics of electric engineering ECTS 18**		**Metrological aspects of Instrument-Engineering ECTS 13**		**Technical equipment of the technological cycles ECTS 17**	
	History of Kazakhstan **ECTS 4**	Electrotechnics **ECTS 5**		Basics of information and measurement technologies **ECTS 6**	Standardization, metrology and certification **ECTS 3**	Elective discipline 1 **ECTS 4**	
		Materials Study **ECTS 3**		Integrated and microprocessor circuitry **ECTS 5**		Elective discipline 2 **ECTS 5**	
		Basics of electronics **ECTS 3**	Basics of automation **ECTS 3**			Elective discipline 3 **ECTS 4**	
			Practical Training 1 **ECTS 4**			Elective discipline 4 **ECTS 4**	
			Electric engineering ECTS 8	**Technological provision of the development of industrial systems ECTS 11**		**Modern devices of scientific and research activity ECTS 14**	
			Elective discipline 1 **ECTS 4**	Elective discipline 1 **ECTS 4**	Elective discipline 2 **ECTS 3**	Devices and methods of research **ECTS 5**	
			Elective discipline 2 **ECTS 1**		Elective discipline 3 **ECTS 4**	Electromagnetic compatibility in Instrument Engineering **ECTS 5**	
			Elective discipline 3 **ECTS 3**				Pre-diploma practice **ECTS 4**
State Language ECTS 9				**Management of production sites ECTS 12**			
Kazakh **ECTS 5**	Kazakh **ECTS 4**			Elective discipline 1 **ECTS 3**			
				Elective discipline 2 **ECTS 5**			
				Elective discipline 3 **ECTS 4**			
Foreign language ECTS 9			**Fundamentals of Economic Studies ECTS 3**	**Processing of information data flows ECTS 8**			
English (German) **ECTS 5**	English (German) **ECTS 4**		Basics of Economic Theory **ECTS 3**	Elective discipline 1 **ECTS 4**	Elective discipline 2 **ECTS 4**		
The interaction between man and nature ECTS 5							
Ecology and Sustainable Development **ECTS 3**	Basics of Life Safety **ECTS 2**						
	Law culture ECTS 3	**Social and humanitarian knowledge ECTS 10**					**Bachelor's Degree work ECTS 26**
	Foundations of Law **ECTS 3**	Philosophy **ECTS 4**	Political Science **ECTS 3**				
		Social Science **ECTS 3**					
Healthcare (beginner level) **ECTS 6**		**Healthcare** (extending level) **ECTS 6**					
Physical Education **ECTS 5**	Physical Education **ECTS 1**	Physical Education **ECTS 4**	Physical Education **ECTS 2**				
6 exams, 1 differential credit	7 exams, 1 state examination, 1 differential credit, 1 assessment (practice report)	6 exam, 1 differential credit, 1 regular essay	7 exams, 1 assessment (practice report), 1 differential credit, 1 regular essay	7 exams, 1 regular essay	7 exams, 2 regular essays, 1 assessment (practice report)	6 exams, regular essay	1 assessment (report on practical training for the diploma), 1 state examination in specialty, Bachelor's work defense
Semester total: ECTS 30	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**
Elective course 0 ECTS (0%)		Elective course 8 ECTS (13,3%)		Elective course 47 ECTS (78,3%)		Elective course 43 ECTS (71,7%)	

Curriculum of the Bachelor's Programme for Electric Power Engineering

1 semester	2 semester	3 semester	4 semester	5 semester	6 semester	7 semester	8 semester
Fundamentals of Mathematics and Natural Sciences ECTS 24		**Physical and chemical properties of materials ECTS 10**		**The fundamental issues of power engineering ECTS 24**		**Organization of production ECTS 8**	
Mathematics 1 **ECTS 5**	Mathematics 2 **ECTS 4**			Information and Measuring Equipment **ECTS 3**		Economics of industry **ECTS 5**	
Computer Science **ECTS 5**	Physics1 **ECTS 4**	Physics 2 **ECTS 5**	Electrotechnical Material Studies **ECTS 3**	Electric Power Engineering **ECTS 7**	Power Transmission and Distribution **ECTS 4**	Occupational Safety and Health **ECTS 3**	
Introduction to Specialty **ECTS 3**	Engineering and Computer Graphics **ECTS 3**		Educational Practice **ECTS 2**	Electrical Machines **ECTS 6**	Practical Training **ECTS 4**		
	History of State ECTS 4	**Analysis of the electrical state of energy facilities ECTS 14**		**Electromechanical equipment ECTS 13**			
	History of Kazakhstan **ECTS 4**	Theoretical Foundations of electrotechnics 1 **ECTS 4**	Theoretical Foundations of electrotechnics 2 **ECTS 4**	Electromechanics and electrotechnical equipment **ECTS 8**	Mechanics **ECTS 5**		
			Mathematical tasks and computer modeling in electric power engineering **ECTS 6**				
State Language ECTS 9		**Technical equipment of energy facilities ECTS 17**		**The application of electric power ECTS 15**		**Applied aspects of power engineering ECTS 26**	
Kazakh **ECTS 5**	Kazakh **ECTS 4**	Elective discipline 1 **ECTS 4**	Elective discipline 2 **ECTS 4**	Elective discipline 1 **ECTS 3**	Elective discipline 2 **ECTS 3**	Elective discipline 1 **ECTS 3**	
		Elective discipline 3 **ECTS 3**	Elective discipline 4 **ECTS 3**	Elective discipline 3 **ECTS 3**	Elective discipline 4 **ECTS 3**	Elective discipline 2 **ECTS 3**	
		Elective discipline 5 **ECTS 3**			Elective discipline 5 **ECTS 3**	Elective discipline 3 **ECTS 4**	
						Elective discipline 4 **ECTS 3**	
						Elective discipline 5 **ECTS 3**	
						Elective discipline 6 **ECTS 6**	Practical Training For The Diploma **ECTS 4**
Foreign language ECTS 9			**Foundations of Economic Studies ECTS 5**		**Switching devices in electric power engineering ECTS 8**		
English (German) **ECTS 5**	English (German) **ECTS 4**		Foundations of Economic Theory **ECTS 3**		Elective discipline 1 **ECTS 4**		
					Elective discipline 2 **ECTS 4**		
The interaction between man and nature ECTS 5							
Ecology and Sustainable Development **ECTS 3**	Basics of Life Safety **ECTS 2**						
	Law culture ECTS 3	**Social and humanitarian knowledge ECTS 10**					**Bachelor's degree work ECTS 26**
	Foundations of Law **ECTS 3**	Philosophy **ECTS 4**	Political Science **ECTS 3**				
		Sociology **ECTS 5**					
Healthcare (beginner level) **ECTS 6**		**Healthcare** (extending level) **ECTS 6**					
Physical Education **ECTS 4**	Physical Education **ECTS 2**	Physical Education **ECTS 4**	Physical Education **ECTS 2**				
6 exams, 1 differential credit	7 exams, 1 state examination, 1 differential credit	7 exams, 1 differential credit	7 exams, 1 assessment (practice report), 1 differential credit, 1 regular essay	6 exams, 1 regular essay	7 exams, 2 regular essays, 1 assessment (practice report)	8 exams, 1 regular essay	1 assessment (report on practical training for the diploma), 1 state examination in specialty, Bachelor's work defense
Semester total: ECTS 30	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**
Elective course 0 ECTS (0%)		Elective course 17 ECTS (28.3%)		Elective course 23 ECTS (38.3%)		Elective course 32 ECTS (86.7%)	

Curriculum of the Master's Programme for Electric Power Engineering

Table 17 – Semesters curriculum for the students of 6M071800 – Electric Power Engineering (scientific and pedagogical) educational program

1 semester	2 semester	3 semester	4 semester
Basis of scientific world view ECTS 20	**Technical provision of the experiment ECTS 20**	**Mathematical provision of the experiment ECTS 15**	
Foreign language (professional) ECTS 4	Elective discipline 1 ECTS 7	Elective discipline 1 ECTS 4	
Pedagogics ECTS 4	Elective discipline 2 ECTS 7	Elective discipline 2 ECTS 7	
Psychology ECTS 4	Elective discipline 3 ECTS 6	Elective discipline 3 ECTS 4	
History and philosophy of science ECTS 4			
Contemporary problems of electric-power engineering ECTS 4			
Science and information approach to the research ECTS 20		**Pedagogical and research work ECTS 15**	
Elective discipline 1 ECTS 5	Elective discipline 3 ECTS 5	Pedagogical practice ECTS 3	
Elective discipline 2 ECTS 5	Elective discipline 4 ECTS 5	Research practice 1 ECTS 8	Research practice 2 ECTS 4
		Science and research work ECTS 20	
		Science and research work ECTS 4	**Science and research work ECTS 16**
			Final attestation ECTS 10
7 examinations	5 examinations	3 examinations, 2 marks (practice report)	1 mark (practice report), 1 practice state examination, Defense of Master's thesis
Semester total: ECTS 30	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**
Optional component 40 ECTS (66,7%)		Optional component 60 ECTS (100,0%)	

Table18 – Academic plan for master degree students EP 6ME71800– Electric-power engineering (profile, Duration of study 1 year)

1semester	2 semester
Bases of management ECTS 12	
Foreign language (professional) ECTS 4	Theory and practice of technical experiment in electric-power engineering ECTS 2
Management ECTS 2	
Psychology. ECTS 4	
Science and information approach in the research in electric-power engineering ECTS 10	
Elective discipline 1 ECTS 5	
Elective discipline 2 ECTS 5	
Contemporary technics and technology in electric-power engineering ECTS 20	
Elective discipline 1 ECTS 6	Elective discipline 3 ECTS 5
Elective discipline 2 ECTS 4	Production practice ECTS 5
	Experiment and research work ECTS 8
	Final attestation ECTS 10
Semester total: ECTS 30	**Semester total: ECTS 30**
7 examinations	2 examinations, 1 mark (practice report), 1 state exam on the specialty, defense of Master's thesis
Optional component 48 ECTS (80%)	

Table 19 – Academic plan for master degree students EP 6ME71800 – Electric-power engineering (profile, Duration of study 1.5 year)

1 semester	2 semester	3 semester
Bases of management **ECTS 18**		
Foreign language (professional) **ECTS 4**	Business Kazakh language **ECTS 2**	
Management **ECTS 2**		
Psychology. **ECTS 4**		
Theory and practice of technical experiment in electric-power engineering **ECTS 6**		
Contemporary technics and technology in electric-power engineering **ECTS 18**		
Elective discipline 1 **ECTS 6**	Elective discipline 2 **ECTS 6**	
	Elective discipline 3 **ECTS 6**	
Science and information approach in the research in electric-power engineering **ECTS 8**	**Management of economy in electric-power industry** **ECTS 12**	**Production practice** **ECTS 10**
Elective discipline 1 **ECTS 4**	Elective discipline 1 **ECTS 6**	
Elective discipline 2 **ECTS 4**	Elective discipline 2 **ECTS 6**	
	Experiment and research work **ECTS 14**	
	Experiment and research work ECTS 4	**Experiment and research work** ECTS 10
		Final attestation **ECTS 10**
Semester total: **ECTS 30**	**Semester total:** **ECTS 30**	**Semester total:** **ECTS 30**
7 examinations	5 examinations	1 mark (practice report), 1 state exam on the specialty, defense of Master's thesis
Elective component 72 ECTS (80%)		

- A model curriculum is approved by the Ministry of Education and Science containing a mandatory component and regulating the amount of credits allocated to the study of the required courses and elective courses and setting the duration and types of practices.
- The so-called Working Educational Plan (WEP) is affirmed by the rector and based on the decision of the Educational Council. The list of subjects of compulsory component and elective subjects is made with the number of credits, forms of control, additional types of education and final attestation.
- The Individual Curriculum (IC) defines the educational path of each student. It is approved by the dean of the faculty in three copies: one is kept in the dean's office, the second in the registrar department forming the basis for monitoring the implementation and mastering of students' professional educational program, the third copy is given to a student for the organisation of an interim assessment.
- The development of IC is carried-out by students on the basis of the model curriculum and the elective courses catalogue. Mandatory disciplines and elective disciplines from the catalogue of elective disciplines are included in IC. The number of credits included in the Individual Study Plan for grant holders (students) is regulated.
- Students paying for their studies can form their individual curriculum with fewer credits than it is set for mastering the educational programme of the corresponding level, but the duration of studies will increase in this case.
- Students can include the disciplines from the catalogue of elective disciplines of other specialties under the condition that all the prerequisite disciplines have been studied.

Analysis of the peers:

Overall, the curricula of the degree programmes correspond to the intended learning outcomes referred to in chapter B-2.2. The objectives and the content of the individual modules are coordinated in order to avoid any unintended overlaps.

Discussions in the audit meetings in this respect raised the question, where subject fields like High Voltage Engineering, Power Semi-Conductors or Power Electronics are reflected in the curriculum. It could be surmised from the answers of the programme coordinators that these technical aspects are mostly taught in individual lectures which form (mandatory or eligible) parts of the comprehensive "modules", now figuring as the basis of the "module" descriptions. And that is exactly, why the peers found it difficult to identify these subject-related areas in the study plans and descriptions alike (in this regard see especially assessment of the peers in chapter B-2.3).

On inquiry, the representatives of the HEI also reported that the department has already started teaching some lectures in English, though not yet entirely "modules" (in the sense the HEI uses the term).

Assessment of Peers; ASIIN-Criterion 2.6:

The peers found the requirements of the above mentioned criterion to be adequately met. They considered the presented degree programmes as well-founded study concepts that in particular integrate a good education of fundamentals in mathematics and natural sciences.

For the award of the EUR-ACE® Label:

The peers deemed the curricular content suitable to achieve the intended learning outcomes necessary for awarding the EUR-ACE® label.

B-3 Degree programme: structures, methods and implementation

B-3.1 Structure and modularity

The modules of the said curricula have the following size:

- Bachelor's programmes: module workload on a regular basis is 3 to 8 ECTS credits, with very few non-technical or soft skills modules credited with 2 ECTS credits; 20-22 modules have to be studied within bachelor educational programmes; module duration is 1 or 2 semesters;
- Master's programme: module workload on average is 4 to 8 ECTS credits, with few non technical or soft skills modules credited with 2 ECTS credits; 4-6 modules have to studied, from which 3-5 are selected and one is compulsory; module duration is 1 or 2 semesters;

- Bachelor's programmes and Master's programme: actually, individual modules are summarized in module descriptions that encompass all learning units ("modules in the proper sense") belonging to subject specific fields of knowledge;
- Bachelor thesis: writing and defense of the Bachelor's dissertation, the workload of which is 26 ECTS credits.
- Master thesis: writing and defending of Master's dissertation is credited 18-24 ECTS credits (profiled track) and 30 ECTS credits (for scientific and pedagogical track).

International exchange of students is facilitated and supported by the work of the Center of Academic Mobility. Provisions concerning the transfer of students explicitly aim, inter alia, at promoting the mobility of students, either in other Kazakh HEIs, or abroad. SER reports on student exchange experiences with industrial companies as well as other universities abroad.

Analysis of the peers:

The ASIIN-criteria for modularisation are met. This applies with the reservation that the constituent units of "modules", which are indicated in the study plan, are interpreted as "modules" in the more technical sense of the EHEA terminology (see above chapter B-2.3). With this restriction in mind, each module usually consists of different didactic elements such as theoretical lectures, exercises and/or practical elements in subject related laboratories. Overall, the modules in this sense can also be considered as constituting coherent and consistent components of teaching and learning.

The module blocks or groups of modules now referred to as "modules" in the study plans and module descriptions offer a wide range of individual electives in the programmes under consideration. This ensures individual profiles and study courses, but also raises the problem of providing this vast array of electives in each semester. As a matter of fact, the range of electives is contingent depending on the number of participants and other factors, as students confirm during the audit talks. Otherwise, they apparently self organise and largely decide which elective courses are offered eventually.

As to the different models of the Master's programme (1, 1,5 and 2 years duration) the HEI points to the national strategy of educational diversification aiming at building up a qualified workforce for the engineering job market and recruiting young academics for education, research and science at the same time.

The HEI has also made it very clear in the discussions that it is interested in broadening the international exchange of both students and teaching staff, and that it is eager to promote academic mobility by any means. It has been indicated earlier in this report that rules of recognising academic activities finished externally, which more directly refer to achieved qualifications or competences, might be an important contribution to that aim. Preconditions

for outgoing students who are willing to study abroad are, of course, language skills and, specifically, English language skills. In the talks with students, it has been almost impossible to gather a reliable impression of the actual English language skills. Further efforts of the HEI in that respect, for instance by gradually widening the share of courses taught in English, seem to be recommendable.

Assessment of Peers; ASIIN-Criterion 3.1:

The peers considered the requirements of the above mentioned criterion as not fully met. From their perspective, the referential units of "modules" must be made unmistakably transparent and communicated accordingly. This has to be done in all study related documents, but in the module descriptions in the first place. Furthermore they recommended that, regarding the programme educational objective of internationality, existing efforts to enhancing English language skills and to offer English-medium courses in the curriculum should be strengthened. In that respect cooperation with other HEIs, in particular HEIs abroad, should be further developed.

B-3.2 Workload and credit points

According to the institution, 1 ECTS credit equates to 30 hours of student workload. In the calculation of the contact work each academic hour per week is calculated as 50 minutes.

Students' workload includes classroom trainings and individual work of students or graduates; ratio of classroom teaching and independent work for the Bachelor programmes is 1:2 to 1:4 for the Master's programme.

Each semester 30 ECTS credits, each study year 60 ECTS credits are awarded. Undergraduates and graduate students receive credit points only for the achievements assessed in the examinations that have to be passed according to the curriculum.

Credits for practical placements (at least 10 ECTS credits in the Bachelor's programmes) are awarded for fulfilling engineering-related tasks during the professional work phases (practical training, work training, pre-graduation practical training). This needs to be assessed and confirmed by the practical training consultant in the company.

Practical training in the Master's programme comprise at least 4-12 ECTS credits depending on the chosen direction, but aren't included in the general workload for the programme.

Analysis of the peers:

It must be pointed out right at the beginning that the HEI has adopted the ECTS credit point system and thus transferred the original teaching-load-oriented Kazakh credit point system into the ECTS, which is, in the first place, designed as an instrument to measure students' workload

in individual courses, per semester and per study year. However, regarding the fact that the introduction of the ECTS system is comparatively new and that the planning could not yet be checked against the students' actual workload, it might be reasonable to implement appropriate mechanisms in the quality management system in order to verify whether the estimated workload matches the actual workload of the students.

While talking with students, one received the impression that the latter didn't have a precise understanding of the ECTS. Since students were used to the Kazakh credit point system with working hours of the teaching staff at its basis, the peers suggest intensifying the information on the ECTS, in particular, with regard to its relationship with the students' workload. This seems important, since a realistic calculation of students' workload in the meaning of ECTS is a precondition for an adequate allocation of credit points.

Assessment of Peers; ASIIN-Criterion 3.2:

The peers found that the ASIIN-criteria for the award of credits following the European Credit Transfer System (ECTS) are largely met. They, nevertheless, recommended to include mechanisms in the quality management system in order to verify whether the estimated workload matches the actual workload of the students. If major differences occur, ECTS credits allocation must be adjusted.

B-3.3 Educational methods

According to the self-assessment report, the following educational methods are in use:

- Lectures, exercises, labs, case studies, practical training in companies, degree project (undergraduate programmes) and master thesis;
- Training with the use of distance learning technologies ("Prometheus 4.0");
- Carrying out laboratory practical works and practical classes using computer real-virtual technologies.
- Provision of textbooks, teaching aids, electronic textbooks; usage of computer presentations while doing lectures;
- Concerning students' workload SER differentiates two forms:
    - students' independent work (preparation for classes, doing home assignments and individual tasks);
    - independent work of students under the guidance of teachers (according to the schedule aimed at giving consultations, assessing tasks, conducting tests and control tasks).

Analysis of the peers:

Overall, the teaching methods used for implementing the didactical concept seem to be appropriate to support the attainment of the learning objectives. Students favourably referred

to electronic devices provided by the HEI to support their learning efforts (like multimedia equipment, distance-learning technologies, web technologies, computer technologies for doing laboratory works etc.).

In general, a fair ratio of contact hours to self study seemed to be implemented in the study programmes contributing to the achievement of the defined objectives. However, the only limited validity of this assessment should be kept in mind, since the translation of the Kazakh credit point system into the ECTS system is, as stated earlier in this report, relatively new, and reliable workload evaluations are missing so far. Apart from that it can be said that the time available for carrying out independent scientific work seems largely to be confined to the dissertation work at the end of the respective study programme.

Assessment of Peers; ASIIN-Criterion 3.3:

The peers came to the conclusion that the needs of this criterion are adequately met. Still, with a view to the internationalisation strategy of the HEI they strongly recommended to enhance scientific/research aspects in the said programmes.

B-3.4 Support and advice

Offers for support and counselling of students are provided as described below:

- According to SER electronic materials are widely used in the educational process (electronic educational and methodological complexes, electronic editions) which are published in the local area network in the system of electronic educational content management. This system serves as network information and programme shell, access is provided via Internet or local network of the HEI. The system solves a set of tasks, from organizing, centralizing, effective governance and providing easy and quick search of the needed electronic educational-methodical complex to the formation of various statistical reports.
- Teachers organize additional consultations – 1 hour per week for ensuring high-quality learning of subject material. Timetable of their conduct is approved by heads of departments no later than two weeks before the start of a training session.
- Teachers of the department “Power Engineering and Instrument-Engineering” also consult with up to 95% of students with the use of distance technologies and e-mail. In 2012 a new form of consultations has been introduced - the use of video conferencing, whose high efficiency was especially apparent during the consultations and preliminary defenses of degree and course works.

Analysis of the peers:

It can be stated that sufficient resources are at the department’s disposal to guarantee support and counselling for students.

Assessment of Peers; ASIIN-criterion 3.4:

The peers found the said criterion to be fully met by the counselling concept of the HEI. They particularly emphasised the good student-teacher relations and the open-door policy which allows ad hoc and informal solutions to problems the students encounter.

B-4 Examinations: system, concept and organisation

According to the self-assessment report and the information gathered during the discussions, the **exam methods** described subsequently are foreseen:

- Assessment is carried out in a three-tier manner: the *current control* (the work of a student at the seminary, practical, laboratory classes, and assessment of independent work), *landmark control* (verification of students' knowledge after the mastering of certain sections of a discipline), and the *final control* (examination).
- Basic forms of conducting interim assessments are: computer and paper test, written work, oral examination, creative examination; examination materials must be presented to the students two months before the session.
- *Also possible form*: computer-based knowledge testing (performed at the HEI since 1998 according to “Regulations of the computer-based testing”), also as part of an active learning mode with the help of a “WebTest” system which has been developed to this end in particular.
- Criteria for knowledge and skills assessment at the examination are developed taking into account the specific features of the discipline and approved at the meeting of the department.
- By the decision of the Academic Board of the university the forms of exams are approved at the beginning of the academic period.
- In order to improve the quality of implementation of the educational program and to ensure objective evaluation of educational achievements of students, learning processes and final assessment are separated. When conducting the control of knowledge in the form of computer-based testing or in writing, experts are foreseen in the exams schedule, examination boards are created for conducting oral exams.
- Final certification of students is carried out as foreseen in the academic calendar, according to the forms defined by an operating curriculum of the specialty. The topics of dissertation papers and master’s theses are assigned to the students at the beginning of the graduating course and approved by the order of the rector. To conduct the final assessment the State Examination Board (SEB) is created for each specialty and all forms of learning. Students who have completed the educational process in accordance with the requirements of the curriculum are allowed to the final assessment.
- Review of final work is carried out only by external experts from other organisations, and who are qualified within the profile of the protected work. Reviewers of graduate works are approved by the order of the rector within the overall list submitted to the department head indicating the place of work and the designation a month before the work of State Examination Board (SEB).

- SEB consists of the chairman and members of the committee, is organized annually and exists for the calendar year only. The members of SEB are: Dean of the Faculty or the Head of the graduating department and other members from among the leading professors, associate professors, specialists, corresponding to the profile of the graduates. The quantitative composition of a single SEB should be no more than six people, including the chairman and technical secretary.
- Dissertation papers and master's theses shall be defended: The duration of the defense of a thesis / project should not exceed 50 minutes per student, while the student makes a report for no more than 15 minutes. The duration of a master's thesis defense should not be less than 50 minutes. To defend the master's thesis a graduate makes a report for at least 15 minutes.
- The number of exams is up to eight as a maximum in the Bachelor's programmes and up to seven exams in the Master's programme.
- Exams are cumulatively listed in the "module" descriptions which largely are comprised of smaller units building "modules" in the more proper sense of consistent and self-contained learning and teaching units.

The **organisation of exams** is managed as follows: exam periods, make-up exams, registration, duration for marking, and special regulations for handicapped students.

- Period of examination ("examination session"): winter and summer sessions in accordance with the operating curriculum and the academic calendar; duration of each session not less than one week;
- Summer session: transfer session regarding the requirements of transfer to the next academic year;
- Examinations schedule: compiled by the planning control in cooperation with the deans' office of the corresponding faculty; afterwards it is approved by the Associate Dean of Academic Affairs.
- Overall assessment of knowledge is carried out on a 100-point system, including 60% of landmark controls, 40% of final control assessment.
- Students who scored not less than 50 points in the final test week are admitted to an exam. Students who got less than 50 points on the final test week are *not* admitted to an exam. If scoring less than 50% of the allocated number of points at the exam, students get an "unsatisfactory" mark. Such "academic debts" can be eliminated for a set fee during the summer (optional) semester or during next academic year with another cohort studying this discipline. The schedule for the summer (optional) semester is approved by the Associate Dean of Academic Affairs. The approved examination form remains the same for the re-examination.
- Students who have completely fulfilled the requirements of the course curriculum, successfully passed all the exams and obtained the pass mark set level (GPA) are transferred to the next academic year by the Rector's order. GPA Level is set as follows: for students of the 1st year – 1.5, for the students of the 2nd year – 1.6, for the third year students – 2.0; for the 4th year students – 2.2, for the 1st year graduates – 3.0.

Analysis of the peers:

In general, the concept of examination at the HEI appears to be oriented at checking whether the intended learning outcomes of an individual module have been achieved properly. Moreover, the combination of current, landmark and final control may be considered as bringing students to sustainably acquire technical and non-technical skills and competences. On the other hand, it can be concluded from the comments of lecturers and students and the sample of tests provided by the HEI that those interim tests, which certainly serve as an effective mode of preparation for the final exams, are narrowly developed with view to the final exams, thus leaving little or hardly any room to prove the ability of problem solving in engineering assignments that bear uncertainties or unspecified parameters in their design. However, students insisted that interim tests are aimed at solving real engineering tasks as well, and they felt this continuous testing an indispensible instrument to achieve sustained learning results. In any case, the concept of continually assessing the learning progress of students obviously corresponds to the high success rates of exams with few students failing at all.

The samples of dissertation works (Bachelor's programmes) respectively master's theses and exam papers presented to the peers for inspection in general contributed to the impression that the level of achievements of the graduates reflected the sought level of Bachelor's as well as Master's qualification. But it also appeared that graduate projects were seldom directly linked to or inspired by industry related tasks, but mainly originated in assignments related to individual research interests of experts, research projects or core areas of research of the department.

The rules for examinations and advancement, though appearing rather complicated, seemed to be well known and dealt with by students and lecturers alike. Generally, the regulations allow for an adequate exam preparation of students. Peers also judged that the grading criteria were transparent to the students. On being questioned, students considered the organisation of examinations as appropriate and responsive to their needs. It is ensured that students are informed about examination and pre-examination requirements at the commencement of the teaching term; information on the form of examinations is given, *inter alia*, in the module descriptions.

Assessment of Peers; ASIIN-criterion 4:

All in all, the peers found the demands of the aforementioned criterion being met. Yet, they suggested a greater share of graduation projects (Bachelor's and Master's theses) with industry initiated assignment of tasks, so as to more adequately reflect the strong ties with companies and the orientation of the programmes to applied research topics.

B-5 Resources

B-5.1 Staff involved

According to the HEI, the teaching staff is composed of three Doctors of Science, professors; 29 Candidates of Science; five Masters as senior lecturers, and four senior lecturers. Two Faculty members are certified lecturers of a Master's programme at MANCOSA University, five members of the Faculty are certified lecturers and development engineers of programmes and supplements in Pro Engineer, AutoCad, LabVIEW, Compas-3D environments.

Within the programme of forced industrial-innovative development of the region SER points to co-operation with four enterprises of the city, with leading domestic and foreign research institutes and companies such as, for example, the All-Russian Scientific Research Institute "Neftemash", All-Russian Scientific Research Institute of Automation and Communications (Moscow), Ltd. "Promtehekspert" (Moscow), NEC "cars" (St. Petersburg), the holding company of the Urals "HIMPEK" (Perm, Russia) and others.

For the period 2002 to 2010 the teaching staff highlights more than 20 financed scientific and research papers in the area of electric power engineering and instrument engineering including:

- "Electro technological facilities for the smelting of oxide materials" in conjunction with the Almaty University of Power Engineering and Communications for the "Kazogneupor" joint-stock company and "Podolskogneupor" joint-stock company;
- "Intelligent integrated system for monitoring, optimizing and improving the quality of teaching and material resources of the university on the basis of new information technologies", performed by the Science Foundation grant of MES RK;
- "The development of high-precision automated lifting and turning devices of the research receiving-emitting sonar equipment" in cooperation with "ZIKSTO" joint-stock company for Ichanskiy Institute of Electronic Technology (China);
- "The development of process and methodology of inductive heating of repair parts with the manufacture of the prototype" in conjunction with "Nanosphere" Public Limited;
- "The development of an automated substation with a controlled jet pump" in conjunction with "Nanosphere" Public Limited.

Furthermore, in the area of electric power engineering and Instrument Engineering for the period of 2002-2011 the Department faculty reportedly have published over 300 scientific papers, including more than 20 papers with high impact factor, 150 articles in journals recommended by the Higher Attestation Committee of Russia and Ukraine, as well as the Monitoring Committee of Education and Science of the Kazakh Ministry of Education and Science. Three monographs, two textbooks and teaching aids have been published. The faculty members are also said to have made presentations at international conferences in Germany,

Finland, Poland, Bulgaria, the Czech Republic, Russia, Kazakhstan and Ukraine. Two staff members are “The best teacher of the University of the RK” grant holders.

Analysis of the peers:

The composition and qualification of the staff seems to be adequate in order to facilitate the achievement of the objectives of the degree programmes. This has been particularly confirmed by the students, who generally feel that they are instructed and advised by a highly qualified and competent teaching staff.

It is noteworthy that research activities of the teaching staff are carried out on a steadily growing scale. This is convincingly reflected in research activities undertaken in cooperation with other notable institutions and industrial undertakings as well as numerous research papers, though not always published in high ranked, peer-reviewed journals.

Assessment of Peers; ASIIN-criterion 5.1:

The peers deemed the demands of the abovementioned criterion adequately fulfilled. They strongly support the HEIs intention to broaden the research basis of the department, since this is of great importance for further enhancing the quality basis of the Master’s programme, in particular.

B-5.2 Staff development

The institution reported on the following measures to subject-related and didactical further training for staff:

- self-study training, technical training, professional courses provided by the HEI’s Institute of Training and Professional Development (ITPD) and other institutes of higher education, study courses provided by special training centers, participation in methodological seminars and conferences, exhibitions and other activities, research work and graduate courses.
- priority aspects of *faculty professional training*: broadening of theoretical knowledge, forming and improvement of methodological culture, improvement of pedagogical skills, adoption of different methods of educational work, and forming and improvement of skills necessary for using modern technical means of teaching and for development of methodological support of the educational process.
- priority aspects of *educational staff professional training*: basics of records management, different aspects of legislation, and support of educational process by means of modern methodologies and technologies.
- priority aspects for *support staff* are: sanitary requirements, job safety, safety techniques, and fire safety.
- According to SER there are also special incentive strategies in place: rating system of payment, material encouragement, opportunities to advance in skills provided by the university administration and others.

- Professional training is controlled by heads of subdivisions; the results of it represented in form of reports are discussed at the department meetings. In case of non-achievement of the set goals the corresponding reasons are analyzed and correcting actions are proposed.
- Main institute of professional training outside the HEI is the Almatinskiy Institute of Power Engineering and Telecommunications.

Analysis of the peers:

SER repeatedly indicates a clear awareness of the necessity of teaching staff to keep up with state-of-the-art knowledge in the respective subject area as well as in the didactical skills field. In this regard, SER and comments of the HEI during the audit talks documented a number of measures and efforts to increase the disciplinary and didactical expertise of the teaching staff and also to give incentives to consciously confront the topic.

Assessment of Peers; ASIIN-criterion 5.2:

The peers considered the requirements of the said criterion as already met by the human resources policy of the HEI.

B-5.3 Institutional environment, financial and physical resources

North-Kazakhstan State University is a multidisciplinary university which currently offers 48 Bachelor's programmes, 25 Master's programmes and four PhD-programmes. Additional educational programmes of vocational training for professional workers (vocational training courses) are available at the university. The students' contingent, formed according to the programmes of higher vocational and post-graduate education, is estimated at about eight thousand.

Bachelors' and masters' academic work at the university reportedly is managed by the academic methodology service (AMS), an academic innovative service, the registrar's department, and academic mobility and career development centre. Academic methodology service is a university department which is aimed at academic methodological, information-advisory support and supervision of the educational process. AMS is a structural department of the university which is under immediate direction of the vice rector for academic affairs. It may be called a kind of quality assurance section building an integral part of the central administration of the HEI (and as such consisting of the *Methodology department*, *Student statistics department*, *Academic organisation department*, *Control service centre*). The Academic innovative service encompasses the Innovative educational technologies center, the Computer testing department, and the Distance education section.

One more central department to mention here is the social and educational work department (SEWD). Its goal is, as has been told, to create a favorable environment for socially responsible

personality formation, to provide social support for students, to involve the youth in the university's social and cultural activities and realisation of the country's youth policy program. SWED is composed of the museum of the university's history, the students' club, the health department and press centre.

The **financial infrastructure** is described in SER and has been detailed in the discussion rounds during the on-site-visit of the peers.

As to the **physical resources,** SER states that laboratories of engineering profile are available, equipped with facilities on the basis of modern achievements of the electric power industry, Instrument Engineering and computer technologies of foreign producers of educational and scientific equipment such as National Instruments, LPKF Laser & Electronics, Atmel, Analog Devices, etc. Modern software like Multisim, OrCAD, Proteus, Pro Technologies, LabVIEW, MATLAB, Compass 3D, CircuitCAM, Microsoft Project 2007 and others is used in carrying out scientific experiments and studies. Central laboratories of the department of Power Engineering and Instrument Engineering are: Laboratory of Electric Power Engineering, Laboratory of electric machines and electric drive, Laboratory of electric devices simulation and systems, Laboratory of elctrotechnics, electrical safety and material science, Laboratory of data measuring equipment, Laboratory of power supply and installation of electrical equipment, Multimedia Room.

According to SER the HEI is a member of two international consortia and seven International Associations, and cooperates with more than 50 HEIs and international organisations of CIS. The university allegedly supports collaboration with universities of the U.S., Germany, Great Britain, Sweden, Finland, Latvia, including 26 universities and research institutes in Russia. Moreover SER reports on agreements of cooperation and partnership in the implementation of joint educational programmes for training bachelors, masters and doctoral students with educational and research organisations having international accreditation and academic schools, for example the University of Joensuu (Finland), Riga Technical University (Latvia), Novosibirsk GTP (Russia), Omsk State Technical University (Russia), etc.

The *department of Power Engineering and Instrument Engineering* according to SER collaborates with industrial enterprises, including "Petropavlovsk Heavy Machine Building Plant" Joint Stock Company, "ZIKSTO" Joint-Stock company, "SevKazEnergo" Joint-Stock Company, etc. The certified educational centers of "ASCON" company (Russia) and National Instruments (USA) effectively operate to teach programming technologies, development of design documents and intelligent computer devices and systems of management, monitoring, diagnostics, and alarms to students and specialists of industrial enterprises.

Analysis of the peers:

During the on-site visit, the peers visited a variety of labs and the library. Overall, it has been found that the given resources are sufficient, thus facilitating the achievement of the objectives of the degree programmes. Nevertheless, it seemed that not all of the laboratory equipment represents state-of-the-art technology, which would be particularly important with regard to the HEIs decided interest in strengthening the research basis of the department and the study programmes under consideration. In this respect, it could be learned from the comments of the HEI that it regards the continuing further development of its laboratory equipment as one of its priority aims.

Assessment of Peers; ASIIN-criterion 5.3:

The peers considered the requirements of the said criterion as sufficiently met. Yet, they recommended continuously refurbishing the laboratory equipment and replacing out-dated apparatuses and machinery in order to strengthen the research capabilities of the Department. They considered the cooperation with industrial companies in this respect, as already experienced by the HEI, especially helpful.

B-6 Quality Management: further development of degree programmes

B-6.1 Quality assurance and further development

SER registers the following quality assurance elements for the degree programmes under consideration: own strategy and quality assurance procedures; management system of academic programmes and qualifications; developed and approved procedures of assessing students' knowledge; mechanisms for providing faculty's quality and competence; students' support system and training resources; system of internal and external formation.

The monitoring of the effectiveness of quality assurance is conducted through internal audits, assessment of methodological support, evaluation and consideration of issues by collegiate bodies. As a part of these arrangements, the efficiency of the goals and deviations from these goals should be determined. If necessary, the corresponding decisions should be taken or plans should be developed to improve the quality of teaching and educational activities.

The internal audit is organized by the quality management service twice a year. The monitoring plan includes questions related to planning, organizing, monitoring and development of academic programs quality. As a result of this audit corrective actions should be taken.

Assessment of the methodological support is supposed to be carried out at the department meetings, meetings of schools' academic and methodical councils, schools' councils, meetings

of academic and methodological service, the educational-methodical council of the university and the academic council of the university.

The evaluation of department and school activities aimed at implementation of the academic programmes is carried out by means of reports concerning the implementation of work plans, review of problem issues at the meetings of joint bodies, and the ranking of the departments and faculty.

According to SER, on the *faculty level*, the **quality of academic work** is checked by commissions that analyse the quality of teachers' classes, academic and methodological literature used in the process of bachelors' and masters' training. The results of this analysis are discussed during the meeting of the faculty's academic council.

On the *department level*, the academic quality control is carried out in accordance with the approved intra-departmental control schedule in the form of reciprocal attendance and open classes. The results of reciprocal attendance are analyzed during the department's meetings and correction measures are taken if needed.

Analysis of the peers:

On principle, the means of quality assurance introduced, established and put into practice seemed to be suitable to ensure the achievement of the HEIs quality aims, to identify deficits and deficiencies and to promote strategies for removing them.

While the quality assurance system appeared to be generally conclusive, it has been found difficult to assess whether certain quality processes are sufficiently responsive in building a reliable benchmark for substantially checking the feasibility of the self-imposed quality objectives. In particular, the discussion with students led to the impression that the results of course/module evaluations, which are conducted on a regular basis, were not effectively communicated to students and discussed with the lecturers so far. In large part, as it seems, this is due to the fact that neither students nor lecturers feel the need to do so. Consequently, students felt almost unable to assess whether there were any improvements derived from the evaluation results. Because of their good direct contact to the teachers and the opportunity of solving any arising problems that way, students seemed not really worried about the somewhat dysfunctional feedback loop.

Assessment of Peers; ASIIN-criterion 6.1:

The peers considered the requirements of the said criterion as adequately fulfilled already. Strongly supporting the HEI's ongoing efforts regarding the quality assurance of its study programmes, the peers recommended the further implementation and development of the quality management system and the utilisation of its results for continual improvements of the

degree programmes. In particular, students should participate in the evaluation process as well as the process of making use of its results on a regular basis.

B-6.2 Instruments, methods & data

The university systematically collects and analyses information about the progress of undergraduate and graduate students. The results of midterm and final exams have to be discussed and analyzed at the group meeting, at the department meeting and at the faculty and educational and methodological department meetings.

In order to assess the quality of the services, as well as the conditions and resources of educational services the Centre of Quality Management of the university organises the following types of surveys: an annual survey of the graduates relating to the quality of educational services; survey of employers relating to the quality of graduates' preparation (once every two years); an annual survey of students relating to the quality of teaching the disciplines; an annual survey of faculty relating to the organisation of the educational process; survey of students relating to additional areas (e.g. student government, adaptations to studying at a university, etc.).

HEI presents the following data in regard to the study programmes to be accredited:

- Quality of teaching of subjects in the first, second, third, and fourth study year (2008/09; 2009/10) in the Bachelor's programmes;
- Career development figures 2009-2012;
- Results of educational services assessment of engineering graduates in 2010 – 2012;
- Measures taken in response to results of the educational services assessment, as for instance: re-issuing of the educational complexes "Theoretical foundations of electrotechnics 1", "Foundations of electrotechnics", "Electromechanics and electric equipment", "Electrotechnics", Theoretical foundations of electrotechnics 2", "Foundations of automatics", "Electrical supply of industrial enterprises", "Material science", "Electrotechnical material science", and "Electromechanics" according to modern achievements of science and technology; implementation of the tutorial "Apparatuses and methods of investigation"; preparing of a lecture course "Relay protection of power supply systems"; introduction of a laboratory test bench "Foundations of automation".

Analysis of Peers:

The set of tools and instruments in the framework of quality assurance that were already in use has been taken into account. This applies especially in view of modifications in the programmes which have been derived from evaluation results, thereby proving the quality assurance system as effective.

As has already been said, with regard to an adequate and reasonable allocation of credit points, the further development of the quality management system should systematically focus on student workload in order to check whether the respective calculation, which lays at the basis of the ECTS credits allocation is consistent with the actual workload or needs to be adapted, thus pressing for adjustment in the allocation of credits.

Assessment of Peers; ASIIN-criterion 6.2:

Overall, the peers found the demands of the said criterion recognised already. However, in conjunction with their remarks to the further implementation of the quality assurance system, they recommended using the collected data for continuous improvement. In particular, the collection of data should include information about students' actual workload in order to allow for adjustments of the correspondent credit allocation, if necessary.

B-7 Documentation and transparency

B-7.1 Relevant regulations

The regulations mentioned below have been provided for assessment:

- Regulations on the organisation of educational process on the credit framework and allocation structure (put into force)
- Regulations on the computer-based testing (put into force)
- Ministry of Education and Science of the Republic of Kazakhstan, Procedure – Academic and Methodical Work (put into force)
- Ministry of Education and Science of the Republic of Kazakhstan, Procedure – Staff Training (put into force)
- Ministry of Education and Science of the Republic of Kazakhstan, Procedure – Quality Control of the Educational Process (put into force)

Analysis of the peers:

The regulations for study-relevant issues are in place and made available. These regulations include all the information necessary for the admission to the degree programme, its courses, the study plan and the completion of the degree.

Assessment of Peers; ASIIN-criterion 7.1:

The peers concluded that the requirements of the above mentioned criterion are fulfilled.

B-7.2 Diploma Supplement and qualification certificate

Samples of the Diploma Supplement in English language are not provided. The annexes to SER do only contain a Transcript of Records providing information about the individual achievements in the studied disciplines, practical training, and dissertation work and master's thesis.

Analysis of the peers:

Diploma Supplements in the form commonly known in the EHEA have not been submitted to the peers along with the annexes to the SER. Comments of the HEI during the audit discussions may suggest that in fact such a Diploma Supplement is regularly handed out to graduates (along with the certificate and the Transcript of Records, which are both included in the annexes).

Assessment of Peers; ASIIN-criterion 7.2:

The peers concluded that the requirements of the said criterion cannot be considered fulfilled. They deemed it necessary that the HEI introduces a Diploma Supplement for each programme providing more detailed information on the study programme, study goals, intended learning outcomes, as well as the individual achievements of the graduate to external stakeholders. Furthermore, in addition to the final mark, statistical data according to the ECTS User's Guide must be indicated in order to provide for a comparative grading of the final mark.

C Additional Information

Not necessary.

D Comment of the HEI (23.08.2013)

The institution provided the following statement:

"B-1 Formal specifications

[Data of fees and percentage of students studying on the state grants and contract basis are updated according to the information of the HEI (see table p. 7).]

It is possible to enter the part time education on the study programme 5B071800 Electric Power Engineering (Bachelor of Technics and Technology) only in the presence of a diploma of a secondary vocational school or HEI.

At this moment, the number of credits required for getting Bachelor Degree of Technics and Technology on the Electric Power Engineering programme of the part time study is 240 ECTS credits. 60 credits of 240 ECTS credits are awarded on the basis of vocational school (college, technical secondary school) or HEI, and 180 ECTS credits are awarded in the part time study term in the HEI.

Entering the HEI in accordance with the internal regulations (See the §B-2.5) there is the process of assessment and comparison of the academic achievements, received on the basis of vocational school or HEI with the learning outcomes necessary for the awarding of Bachelor Degree of Technics and Technology on the study programme Electric Power Engineering.

In Appendix 1 an example of Addendum to diploma (transcript) is given with the academic achievement of the student of the programme Electric Power Engineering, has completed learning in 2013 for part time. The form of Addendum to diploma (transcript) is approved by MES of the Republic of Kazakhstan. In Appendix 2 an example of Transfer is given testifying the comparison of academic achievement of this student.

B-2.2 Learning outcomes of the degree programmes

In June 2013 at the conventions of special commissions, attended by the stakeholders of this Convention (the Head of Department, representatives of employers, teachers and students) was carried out the analysis of the learning outcomes of the Bachelor's programme 5B071600 Instrument Engineering, Bachelor's programme 5B071800 Electric Power Engineering, Master's programme 6M071800 Electric Power Engineering.

It was analyzed on purpose to identify and include new competencies in the learning outcomes, aiming at future developments in different subject areas and the respective curricular content at different levels.

In the result of analysis and discussion the intended learning outcomes were defined as follows:

The objective of study programme **5B071600 Instrument Engineering** is to provide the condition for a full, high-quality vocational education and for professional competence in the design and operation of advanced industrial instruments and systems in the formation of:

- natural sciences, mathematics and basic knowledge underlying the professional activity of the Bachelor Degree of engineering and technology;
- professional knowledge in solving instrument engineering problems;
- scientific knowledge in the methodology of the design of the industrial instruments and systems.

№	***Learning outcomes***
1	Graduates have knowledge in mathematics and natural science foundations
2	Graduates have a basic knowledge in electrical engineering
3	Graduates have a basic knowledge in information technology
4	Graduates have a sound knowledge in electrical engineering
5	Graduates have a sound knowledge in information technology
6	Graduates have a basic knowledge in one concerning field of specialization
7	Graduates are able to apply actual methods of modeling, calculating, and testing
8	Graduates are able to make research of technical literature of information relating given problems
9	Graduates are able to design and run experiments and computer simulations and to explain the results.
10	Graduates are able to consult data base systems, information on norms, guidelines and safety regulations for these purposes
11	Graduates have special abilities to develop analogue and digital electric and electronic circuits, devices and products
12	Graduates control in their design work the use of elements like modeling, simulation and tests as well as their integration in a problem oriented way
13	Graduates can apply their knowledge and understanding to acquire practical skills for problem solving, for research tasks and the design of systems and procedures
14	Graduates have access to experience concerning possibilities and limits of the application of materials, computer-based model designs, systems, processes and tools for the solution of problems when solving complex problems
15	Graduates know the practice and its demands in production plants
16	Graduates are capable of searching technical literature and other information sources
17	Graduates demonstrate awareness of the health, safety and legal issues and responsibilities of engineering practice, the impact of engineering solutions in a

	societal and environmental context
18	Graduates are in the position to develop marketable products for the global market
19	Graduates are able to analyze and present technical contexts understandingly in their own field and in neighbour fields
20	Graduates are able to operate on technical working tasks in a team and to coordinate it if necessary
21	To demonstrate practical experience, research and professional skills in the field of instrumentation and systems
22	To demonstrate knowledge in the natural sciences and mathematics
23	To demonstrate communication skills
24	To demonstrate knowledge of laws and models of mechanics, electricity and magnetism
25	To demonstrate basic knowledge of the design, construction, installation and operation of industrial automation systems
26	To demonstrate knowledge of the requirements of standardization, metrology ensure and life safety in the design and operation of devices and systems
27	To have an ability to apply basic techniques of marketing and management in the field of instrument engineering
28	Preparedness to use the theoretical and experimental research methods in order to create new advanced devices and systems
29	Be able to use software packages for calculations, modeling and automation design of industrial devices and systems
30	To demonstrate skills in operating studied engineering objects
31	Be able to formulate the main technical and economic requirements to the projected devices and systems
32	To demonstrate skills development and design of devices and systems on modern base
33	To have skills in electronic and computer systems and networks
34	To have professionally knowledge in their subject, to know the basics of industrial relations and management principles based on the technical, financial and human factors
35	To know an official language, the language of international communication, and one foreign language for the provision and documentation of information
36	To have basic skills to analyze the relationship of culture, morality and religion, the relation of culture and technology
37	To demonstrate knowledge of the legal, moral and ethical standards in the professional field
38	To be able to express orally or in written form ideas and variants solving problems
39	Preparedness to achieve an adequate level of physical fitness to ensure full social and professional activities
40	To demonstrate knowledge of laws and models of quantum mechanics, acoustics, optics, atomic physics, statistical physics and thermodynamics
41	To demonstrate knowledge of the theoretical foundations of electrical engineering, the ability to write, analyze and calculate the electrical schematic diagrams
42	Demonstrate knowledge of modern achievements in the field of creation, operation and prospects of the development of complex electronic devices, and systems for a variety of activities
43	Demonstrate knowledge in the field of technical regulations, international and

	domestic standards, tools and techniques of information technology
44	Demonstrate knowledge of the analysis and synthesis of devices, systems and complexes in the chosen field and the principles of their construction and operation
45	Preparedness for checking the technical condition and remaining life of the equipment, as well as to the organization of routine inspections and current repairs
46	To demonstrate the skills of the design, maintenance and operation of equipment and systems of automation and telemechanics
47	Preparedness to work in groups to create projects of automation and communication medium
48	To demonstrate the skills of design and operation of electromechanical, pneumatic and hydraulic equipment

The objective of study programme **5B071800 Electric Power Engineering** is to provide the condition for a full, high-quality vocational education and for professional competence in the field of Electric Power Engineering in the formation of:

- natural sciences, mathematics and basic knowledge underlying the professional activity of the Bachelor degree of engineering and technology;
- professional knowledge in solving Electric Power Engineering problems;
- scientific knowledge in the methodology of the design of the industrial instruments and systems.

№	***Learning outcomes***
1	Graduates have knowledge in mathematics and natural science foundations
2	Graduates have a basic knowledge in electrical engineering
3	Graduates have a basic knowledge in information technology
4	Graduates have a sound knowledge in electrical engineering
5	Graduates have a sound knowledge in information technology
6	Graduates have a basic knowledge in one concerning field of specialization
7	Graduates are able to apply actual methods of modeling, calculating, and testing
8	Graduates are able to make research of technical literature of information relating given problems
9	Graduates are able to design and run experiments and computer simulations and to explain the results.
10	Graduates are able to consult data base systems, information on norms, guidelines and safety regulations for these purposes
11	Graduates have special abilities to develop analogue and digital electric and electronic circuits, devices and products
12	Graduates control in their design work the use of elements like modeling, simulation and tests as well as their integration in a problem oriented way
13	Graduates can apply their knowledge and understanding to acquire practical skills for problem solving, for research tasks and the design of systems and procedures
14	Graduates have access to experience concerning possibilities and limits of the application of materials, computer-based model designs, systems, processes and tools for the solution of problems when solving complex problems

15	Graduates know the practice and its demands in production plants
16	Graduates are capable of searching technical literature and other information sources
17	Graduates demonstrate awareness of the health, safety and legal issues and responsibilities of engineering practice, the impact of engineering solutions in a societal and environ-mental context
18	Graduates are in the position to develop marketable products for the global market
19	Graduates are able to analyze and present technical contexts understandingly in their own field and in neighbor fields
20	Graduates are able to operate on technical working tasks in a team and to coordinate it if necessary
21	To demonstrate practical experience, research and professional skills in the field of instrumentation and systems
22	To demonstrate knowledge in the natural sciences and mathematics
23	To demonstrate communication skills
24	To demonstrate knowledge of the work principles, specifications, and design features of developed and used power tools
25	To Demonstrate basic knowledge of the design, construction, installation and operation of electrical plants
26	To demonstrate knowledge of the requirements of standardization, metrology ensure and life safety in the design and operation of Electric Power Engineering devices
27	Ability to apply basic techniques of marketing and management in the field of Electric Power Engineering
28	Willingness to use the theoretical and experimental research methods in order to create new directions in the field of Electric Power Engineering
29	Be able to use software packages for computing, simulation and computer-aided design systems of Electric Power Engineering
30	To demonstrate skills in operating studied engineering objects
31	Be able to formulate the main technical and economic requirements to the projected devices and systems
32	To demonstrate skills development and design of devices and systems on modern base
33	To have skills in electronic and computer systems and networks
34	To have professionally knowledge in their subject, to know the basics of industrial relations and management principles based on the technical, financial and human factors
35	To know an official language, the language of international communication, and one foreign language for the provision and documentation of information
36	To have basic skills to analyze the relationship of culture, morality and religion, the relation of culture and technology
37	To demonstrate knowledge of the legal, moral and ethical standards in the professional field
38	To be able to express orally or in written form ideas and variants solving problems
39	Preparedness to achieve an adequate level of physical fitness to ensure full social and professional activities
40	To be able to develop the organization principles, design companies and Electric Power Engineering's devices
41	Preparedness for checking the technical condition and remaining life of the equipment, as well as to the organization of routine inspections and current repairs
42	To demonstrate the skills of the design, maintenance and operation of distribution

	networks of 10-220 kV class
43	To demonstrate the skills of the design, maintenance and operation of electrical substations
44	Willingness to work in groups to create a variety of objects of power projects
45	The ability to control the operating modes of the distribution systems and electrical substations

The objective of study programme **5M071800 Electric Power Engineering** is to provide the condition for a full, high-quality scientific and pedagogical and professional education n the field of Electric Power Engineering in the formation of:

- advanced professional competence in the field of research and problem-solving of Electric Power Engineering;
- skills of logical and analytical thinking, communication skills and the ability to express reasonably their views

№	***Learning outcomes***
1	aduates have in-depth knowledge in advanced fundamentals in mathematics and sciences
2	Graduates have in-depth knowledge in advanced subject-specific fundamentals in electrical engineering
3	Graduates have in-depth knowledge in advanced subject-specific fundamentals in information technology
4	Graduates have in-depth knowledge in one of the mentioned primary fields of application based on subject-specific fundamentals
5	Graduates can evaluate new complex modeling, measuring, de-sign and test methods concerning their relevance, effectiveness and efficiency and can develop independently new methods.
6	Graduates have specific skills for the design, development and operation of complex technical systems and services
7	Graduates can develop suitable methods to make concepts, do and evaluate detailed re-search concerning technical topics relating their standard of knowledge and under-standing
8	Graduates are in the position to classify knowledge methodically in different areas, to combine information elements systematically, and to handle the phenomena of complexity
9	Graduates are in the position to use and to develop their knowledge and skills in order to gain practical power for the solution of problems, for the organizing of research and the development of systems and processes
10	Graduates are in the position to reflect systematically non-technical implications of engineering work and to integrate the results responsibly in their actions
11	Graduates are in the position to develop marketable products for the global market
12	Graduates are able to control and organize complex, changing interrelations of work and learning which require new strategic approaches
13	Graduates are able to take over responsibility for scientific contributions to professional knowledge and to professional practice

14	Graduates are able to check the strategic capacity of teams
15	To know an official language to the extent necessary for the conduct of business correspondence and business meetings, as well as the interpretation of the data received from the media
16	To know one foreign language on a professional level
17	To know skills of public speaking, argumentation, discussion and polemic; practical analysis of the logic of various kinds of reasoning
18	To own a culture of communication, knowledge, moral and ethical standards in the professional field
19	To know skills of logical and analytical thinking in solving the objectives and their correct documentation
20	To demonstrate knowledge of management information systems in the field of scientific and educational activities in the institute of higher education
21	To be able to formulate and solve problems arising in the course of scientific research and pedagogical activities, and requiring in-depth professional knowledge
22	To demonstrate proficiency in the use of non-traditional, renewable and alternative energy sources
23	To be able to use advanced processing system and data collection during carrying out of the technical experiment
24	To demonstrate knowledge of the methods of the experiment in the devices and systems of Electric Power Engineering, the ability to plan and conduct experiments in electrical power installations
25	To know the skills of analysis and application of mathematical modeling techniques in the study and design of electric power systems
26	To know the general scientific methodology and logic of science and technology research, design skills of its results in various forms of scientific production
27	To demonstrate knowledge of the principles of organizational and economic activities in the production of electricity
28	To demonstrate the skills of design means of automatic regulation and control of electro-technological processes and installations, as well as system of monitoring and account of electric power
29	To be able to exercise supervision and control over the condition and operation of power equipment, identify the reserves, establish the reasons for the existing shortcomings and faults in his work, to take measures to eliminate them and improve the efficiency of its use

The correlation of aims, competences and modules of the study programmes are presented in the form of objectives matrix in Appendix 3.

B-2.5 Admissions and entry requirements

Students of foreign certificates and diplomas, wishing to receive their degree at NKSU named after M. Kozybayev should pass the nostrification/recognition procedure (The Law on Education of the Republic of Kazakhstan of 27 July 2007, article 39, point 4).

The Center of Bologna process and academic mobility. Ministry of Education and Science of the Republic of Kazakhstan is the organization responsible for implementation of the

nostrification/recognition procedures in the Republic of Kazakhstan, as stipulated in the Rules of verification and nostrification of education credentials, approved by the Order №8 of the Minister of Education and Science, issued on January 10, 2008.

Nostrification is the procedure carried out to determine the equivalence of educational documents, issued to applicant by foreign educational institution or its branch, when there are no international treaties concluded with the given state.

Recognition checks whether the education for which the diploma has been received outside Kazakhstan is of the same level as comparable education in Kazakhstan. It is carried out when there are international treaties concluded between the Republic of Kazakhstan and other countries.

As a result, the Center of Bologna process and academic mobility issues to student a certificate of recognition/ nostrification of educational credentials, or official letter of refusing to provide services on recognition/ nostrification.

According to the amendments to the Law in Education passed by the Republic of Kazakhstan Law №487-IV of October 24, 2011 education credentials of Bolashak Scholarship graduates are recognized in Kazakhstan without the need to pass the nostrification/ recognition procedure (article 39, point 5).

Legal documents regulating the procedure:

- The Law of the Republic of Kazakhstan “On Education” of 27 July 2007.
- The Rules of recognition and nostrification approved by Ministry of Education and Science dated January 10, 2008, №8.
- The Hague Convention Abolishing the Requirement for Legalization for Foreign Public Documents (October 5, 1961).
- The Convention on the Recognition of Qualifications concerning Higher Education in the European Region (Lisbon, April 11, 1997).
- The Agreement “On cooperation in education of the member-states of CIS” (May 15, 1992).
- The Agreement between Belarus, Kazakhstan, Kyrgyzstan, Russia and Tajikistan on mutual recognition and equivalence of educational documents, academic degrees and ranks (Moscow, November 24, 1998) (amendments introduced on February 26, 2002).

- The Agreement between Kazakhstan and Turkmenistan on mutual recognition of educational documents, academic degrees and ranks (Astana, July 5, 2001).

- The Agreement between Kazakhstan and Ukraine on mutual recognition and equivalence of educational documents, academic degrees and ranks (Astana, September 26, 2001).

- The Agreement on mutual recognition and equivalence of educational documents of Secondary (General), Primary Vocational and Secondary Vocational (Special) Education of member-states of CIS (Astana, September 15, 2004).

- The Agreement between Kazakhstan and China on mutual recognition of educational documents and academic degrees (December 14, 2006).

The recognition of qualifications, acquired in other institutions of higher education occurs according to the internal normative document "The rule of filling in of the educational credits transfer," which the first version was approved in April 15, 2011. The second version of this document was approved in 2013 (Appendix 4).

The rules define the procedure of offsetting academic credits during transfer students from one specialty to another, from one study-mode to another, from another university, in the recovery of students, as well as when entering part time study after graduating the secondary vocational school or the university.

For ordering credits introduced an established form of the transfer, including the evaluation, credits, content and disciplines learning outcomes to be evaluated (Appendix 2).

So, for students entered the part time study programme 5B071800 Electric Power Engineering in accordance with the above rules, a procedure of recognition of academic achievement is carried out in the size of 60 credits ECTS, obtained outside of the institution (see Appendix 2).

Thus, the number of credits required for getting Bachelor Degree of Technics and Technology on the 5B071800 Electric Power Engineering programme of the part time study is 240 ECTS credits. 60 credits of 240 ECTS credits are awarded on the basis of vocational school (college, technical secondary school) or HEI, and 180 ECTS credits are awarded in the part time study term in HEI in a four years.

B-3.1 Structure and modularity

In 2013 the structure and modules of the curricula for accredited specialties has been revised. The main principles of the renovations have been reducing the size of modules and the strengthening of connections between educational elements belonging to the same module.

Here are the updated curriculums

Curriculums of the <u>Bachelor's programme 5B071600 Instrument Engineering</u>:

1 semester	2 semester	3 semester	4 semester	5 semester	6 semester	7 semester	8 semester
Basics of mathematics ECTS 9		**Electrotechnics ECTS 9**		**Automation and control systems ECTS 8**		**Economy in the Instrument Engineering ECTS 3**	
Mathematics 1 ECTS 5	Mathematics 2 ECTS 4	Theoretical Foundations of electrotechnics 1 ECTS 5	Theoretical Foundations of electrotechnics 2 ECTS 4	Technical Means of automatics / Typical Automatics ECTS 5	Projecting of Control and Automation Systems / Construction instrumentation ECTS 3	Economics and organization of production / Economy industry ECTS 3	
Computer Science ECTS 5	**Physics 1 ECTS 3**	**Physics 2 ECTS 4**		**Integrated and microprocessor circuit technique ECTS 5**	Basics of data measuring technology **ECTS 3**		
Chemical properties of materials ECTS 3	**Basics of professions ECTS 3**	**Materials Study ECTS 4**	**Automatics ECTS 8**	**Simulation of devices and systems ECTS 9**	**Construction of devices and equipment ECTS 7**		
Chemistry ECTS 3	Introduction to Speciality / Foundations of Instrument engineering ECTS 2	Electrical Materials study / Basics of Materials study ECTS 2	Basics of automatics / Automatic control ECTS 4	Systems of computer mathematics / Software tools for system modeling ECTS 5	Electrical devices / Parts and components of devices ECTS 3	**Development and design of devices and systems ECTS 15**	
Engineer graphics ECTS 3	Educational practice ECTS 1	Fundamentals of Nanotechnologies / Electrical-equipment ECTS 2	Sensors of technological processes / Conversion of measuring signals ECTS 4	Системы автоматизированного проектирования / Основы автоматизированного проектирования ECTS 4	Industrial practice ECTS 4	Calculation and design of equipment / Design and construction of electronic devices ECTS 5	Industrial practice ECTS 5
Foreign language ECTS 9		**Law culture ECTS 3**	**Foundations of devices and systems**	**Advanced language training ECTS 6**	**Metrological aspects in instrument ECTS 10**	Installation and commissioning of devices and systems	

			operation ECTS 7			/ Production of installation works ECTS 5	
English (German) language ECTS 5	English (German) language ECTS 4	Basics of Law ECTS 3	Electromagnetic compatibility/ Foundations of the reliability theory ECTS 2	Kazakh language (professional) ECTS 3	Verification, security and reliability of information-measuring systems and networks / Methods of diagnosis of engineering systems ECTS 3	**Modern electro-mechanical systems ECTS 9**	
Official language ECTS 9		**Social and humanitarian knowledge ECTS 10**	Industrial Safety / Electrical Safety ECTS 2	English (German) language (professional) ECTS 3	Intelligent measuring systems / Intellectual measuring tools ECTS 3	Electromechanics/ Electrical Machines ECTS 5	
Kazakh language ECTS 5	Kazakh language ECTS 4	Philosophy ECTS 4	Industrial practice ECTS 3		Precision of measuring systems / Physical basis of measurements ECTS 4	Algorithms and automation programmes/ Mechatronics and Robotics ECTS 4	
	History of the state ECTS 4	Political science ECTS 3	**Electronics and Modeling ECTS 6**	**Electronic devices in instrument engineering ECTS 12**		**Technological support for the development of production processes ECTS 8**	**Final attestation ECTS 25**
	History of Kazakhstan ECTS 4	Social science ECTS 3	Basics of Electronics / Electronic Engineering Items ECTS 3	Analog and digital electronic devices / Electronics in the instrument engineering ECTS 5	Electrical conversion devices / Power Supply Units ECTS 3	Devices and methods of research / Testing and measuring equipmentECTS 5	Pre-diploma practice ECTS 10
	Interaction of human and nature ECTS 6		Computer graphics / Computer simulation		Analog and digital measuring devices / Circuitry of measuring devices	Technology of Instrument-Engineering / Technology training	Writing of Diploma Thesis (Project) ECTS 4

			ECTS 3		ECTS 4	and automation of production ECTS 3	
	Basics of Life Safety ECTS 3		**Fundamentals of Economic Studies ECTS 3**				State Examination in Specialty ECTS 4
	Ecology and Sustainable Development ECTS 3		Basics of Economic Theory ECTS 3				Defense of Diploma Thesis (Project) ECTS 7
Healthcare (the beginning level) ECTS 6		**Healthcare (intermediate level) ECTS 6**					
Physical training ECTS 4	Physical training ECTS 2	Physical training ECTS 4	Physical training ECTS 2				
3 exams, 1 differentiated test.	6 exams, 1 state examination, 1 dif. test, 1 assessment (practice report),	4 exams, 1 dif. test	5 exams, 1 assessment (practice report), 1 dif. test, 1 term paper	3 exams, 1 term paper	5 exams, 1 term paper, 1 assessment (practice report)	4 exams, 1 term paper	2 assessments (report on the industrial and pre-diploma practice), 1 state examination in specialty, Bachelor's work defense
Semester total: ECTS 30	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**
Elective course 3 ECTS (5.0%)		**Elective course 25 ECTS (41,7%)**		**Elective course 46 ECTS (76,7%)**		**Elective course 57 ECTS (95%)**	

Curriculum of the Bachelor's Programme 5B071800 Electric Power Engineering

1 semester	2 semester	3 semester	4 semester	5 semester	6 semester	7 semester	8 semester
Basics of mathematics ECTS 9		**Electrotechnics ECTS 9**		**Metrological maintenance of electrical equipment ECTS 3**	**Electricity supply ECTS 4**	**Economy in the power engineering ECTS 3**	
Mathematics 1	Mathematics 2	Theoretical	Theoretical	Information and	Electricity supply of	Economics and	

ECTS 5	ECTS 4	Foundations of electrotechnics 1 ECTS 5	Foundations of electrotechnics 2 ECTS 4	Measuring Equipment / Technical Metrology ECTS 3	industrial enterprises / Electricity supply of facilities ECTS 4	organization of production / Economics of industry ECTS 3	
Computer Science ECTS 5	**Physics ECTS 5**	**Materials Study ECTS 6**	**Automatics ECTS 8**	**Electrical Machines ECTS 5**	**Microprocessor electronics ECTS 3**	**Law culture ECTS 3**	
Chemical properties of materials ECTS 3	**History of State ECTS 4**	Electrical materials study/ Basics of material Study ECTS 3	Fundamentals of Automation / Automatic control ECTS 4	**Industrial electronics ECTS 3**	Microprocessors and microcontrollers in electric power engineering / Digital devices and microprocessors ECTS 3	Foundations of Law ECTS 3	
Chemistry / Materials production ECTS 3	History of Kazakhstan ECTS 4	Fundamentals of Nanotechnologies / Electrical insulation devices ECTS 3	Sensors of technological processes / Transducers of measuring signals ECTS 4	**Design and operation of power plants and substations ECTS 6**	**Technical equipment of energy facilities ECTS 7**	**Electrical energy production and distribution ECTS 15**	
Basics of profession ECTS 4		**Technological processes in the power engineering ECTS 6**		Power plants and substations / Equipment of power plants and substations ECTS 3	Electrical devices /Electromechanical and electronic relays and automation devices ECTS 3	Power Generation / The reliability and quality of electricity ECTS 5	Industrial practice ECTS 5
Introduction to Speciality / Basics of Power Engineering ECTS 3	Educational practice ECTS 1	Fundamentals of heat supply / Standard acts of Power Engineering ECTS 2	Industrial practice ECTS 4	Maintenance of power plants and substations / Organization of repair work ECTS 3	Industrial practice ECTS 4	Power Transmission and Distribution / High Voltage Products ECTS 5	
Foreign Language ECTS 9		**Electronics and Modeling**	**Foundations of operation of**	**Future direction of electric and**	**Advanced language training**	**The application of electric power**	

		ECTS 6	**electrical equipment ECTS 6**	**electronic ECTS 7**	**ECTS 6**	**ECTS 8**	
English (German) Language ECTS 5	English (German) Language ECTS 4	Fundamentals of electronics / Elements of Electronic Engineering ECTS 3	Electromagnetic compatibility / Foundations of reliability theory ECTS 3	Electrotechnical equipment / Electromechanics ECTS 3	Kazakh language (professional) ECTS 3	Electric drive / Special Electric drive ECTS 5	
Official language ECTS 9		Computer Graphics / Computer modeling ECTS 3	Industrial Safety / Electrical Safety ECTS 3	Electric Power Engineering / General energy issues ECTS 4	English (German) language (professional) ECTS 3	The control circuit electrically / Integrated Automation of Electric drive ECTS 3	
Kazakh language ECTS 5	Kazakh language ECTS 4	**Social and humanitarian knowledge ECTS 10**		**Switching devices in electric power engineering ECTS 9**		**Ensuring control of emergency situations ECTS 6**	**Final attestation ECTS 25**
	The interaction between man and nature ECTS 6	Philosophy ECTS 4	Social science ECTS 3	Power converter device / Switching equipment ECTS 3	Relay Protection of Electric Power Systems / Elements of automation and relay protection ECTS 3	Management in electric power systems / Automation and control in power systems ECTS 3	Pre-diploma practice ECTS 10
	Basics of Life Safety ECTS 3	Political Science ECTS 3			Transient processes in Electric Power Systems / Insulation and overvoltage in electrical installations ECTS 3	Automation of Electric Power Systems / Technical means of automation of power systemsECTS 3	Writing of Diploma Thesis (Project) ECTS 4
	Ecology and Sustainable Development		**Foundations of Economic Studies ECTS 3**	**Design of electrical systems ECTS 7**			State Examination in Specialty ECTS 4

	ECTS 3						
			Foundations of Economic Theory ECTS 3	Alternative and renewable energy sources / Foundations of energy saving ECTS 3	Electrical systems and networks / Modes of power systems ECTS 4		Defense of Diploma Thesis (Project) ECTS 7
Healthcare (the beginning level) ECTS 6		**Healthcare (intermediate level) ECTS 6**					
Physical training ECTS 4	Physical training ECTS 2	Physical training ECTS 4	Physical training ECTS 2				
3 exams, 1 dif. test	5 exams, 1 state examination, 1 dif. test	3 exams, 1 dif. test	5 exams, 1 assessment (practice report), 1 dif. test, 1 term paper	5 exams, 1 term paper	6 exams, 1 term paper, 1 assessment (practice report)	5 exams, 1 term paper	2 assessments (report on the industrial and pre-diploma practice), 1 state examination in specialty, Bachelor's work defense
Semester total: ECTS 30	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**	**Semester total: ECTS 30**
Elective course 7 ECTS (11.7%)		**Elective course 32 ECTS (53,3%)**		**Elective course 46 ECTS (76,7%)**		**Elective course 57 ECTS (95%)**	

Curriculum of the Master's Programme 6M071800 Electric Power Engineering (profession-oriented study mode, 1 year)

1 semester	2 semester
Business foreign language ECTS 4	**The theory and practice of technical experiment in the electric-power engineering ECTS 2**
Foreign language (professional) ECTS 4	
Fundamentals of management ECTS 6	
Management ECTS 2	
Psychology	

ECTS 4	
Scientific and Information Approach to the research in power engineering **ECTS 10**	
Organization and planning of research / Methodology of scientific creativity / The specifics of the modern scientific creativity ECTS 5	
Information technologies in management / Multimedia Technology / Web-technologies ECTS 5	
Modern techniques and technologies in electric-power engineering **ECTS 20**	
Usage of microprocessors in electric-power systems / Microprocessor systems of automated control / Digital systems of automatization and control in electric power engineering ECTS 6	Computer technologies in electric-power engineering / Technics of the scientific experiment / Automatization of projecting and bases of System of Automated Projection (SAP) ECTS 5
Resource saving in power systems / Electrical equipment / High voltage equipment ECTS 4	Industrial practice ECTS 5
	Experimental and research work **ECTS 8**
	Final attestation **ECTS 10**
Semester total: **ECTS 30**	**Semester total:** **ECTS 30**
3 exams	2 exams, 1 assessment (practice report), 1 state examination in specialty, defense of Master's thesis
Elective course 48 ECTS (80%)	

Curriculum of the Master's Programme 6M071800 Electric Power Engineering (profession-oriented study mode, 1,5 year)

1 semester	2 semester	3 semester
Professional language training **ECTS 6**		
Foreign language (professional) ECTS 4	Business Kazakh language ECTS 2	
Fundamentals of management **ECTS 6**		

Management ECTS 2		
Psychology ECTS 4		
The theory and practice of technical experiment in the electric-power engineering **ECTS 6**		
Modern techniques and technologies in electric-power engineering **ECTS 18**		
Usage of microprocessors in electric-power systems / Microprocessor systems of automated control / Digital systems of automatization and control in electric power engineering ECTS 6	Resource saving in power systems / Electrical devices / High voltage equipment ECTS 6	
	Computer technologies in electric-power engineering / Technics of the scientific experiment / Automatization of projecting and bases of System of Automated Projection (SAP) ECTS 6	
Scientific and information approach to the studies of electric-power engineering **ECTS 8**	**Management of the electric-power economy** **ECTS 12**	**Industrial practice** **ECTS 10**
Research Organization and planning / Methodology of scientific creativity / The specifics of the modern scientific creativity ECTS 4	Economics and organization of energy production / Innovations in Electric-power engineering / Patenting ECTS 6	
Information technology in management / Multimedia technologies / Web – technologies ECTS 4	Installation, adjustment and exploitation of electrical equipment / Electric lighting units / High voltage tests ECTS 6	
	Experimental and research work **ECTS 14**	
	Experimental and research work ECTS 4	Experimental and research work ECTS 10
		Final attestation **ECTS 10**
Semester total: **ECTS 30**	**Semester total:** **ECTS 30**	**Semester total:** **ECTS 30**

3 exams	3 exams	1 assessment (practice report), 1 state examination in specialty, defense of Master's thesis
Elective course 72 ECTS (80%)		

Curriculum of the Master's Programme 6M071800 Electric Power Engineering (scientific and pedagogical direction of study program, 2 year)

1 semester	2 semester	3 semester	4 semester
Professional language training **ECTS 9**		**Mathematical support of experiment** **ECTS 7**	
Foreign language (professional) **ECTS 4**	Business Kazakh language / Professional Kazakh / Record Keeping in the Kazakh language **ECTS 5**	Theory of modeling of the scientific experiment / Theory of wavelets / Theory of automated electric drive **ECTS 7**	
Fundamentals of Scientific Research outlook **ECTS 17**	**Technical support of experiment** **ECTS 20**	**Optimization and control in electric power systems** **ECTS 8**	
Pedagogy **ECTS 4**	Systems of computer mathematics / Visual simulation systems / Automated data collection systems **ECTS 7**	Reliability of electric power systems / Quality of electric energy / Working mode of electric power systems **ECTS 4**	
Psychology **ECTS 4**	Application of microprocessors in electric power systems / Microprocessor system for automatic control / Digital automation and control systems in power engineering **ECTS 7**	Automated systems of electricity supply / Automated systems of control and registration of electricity / Operation of Power Systems **ECTS 4**	
History and Philosophy of Science **ECTS 4**	Systems of artificial intelligence / Modeling of systems / Bases of knowledge **ECTS 6**		
Research Organization and planning / Methodology of scientific creativity / The specifics of the modern scientific creativity **ECTS 5**			
Modern electric power problems **ECTS 4**			
Up-dated tendencies and technologies in education **ECTS 20**		**Pedagogical and research practice** **ECTS 15**	

Higher education Management system / Organization of learning process in Higher Education / Higher Education Trends **ECTS 5**	Information Technologies in Education / Multimedia technologies / Web – technologies **ECTS 5**	Pedagogical practice **ECTS 3**	
		Research practice 1 **ECTS 8**	Research practice 2 **ECTS 4**
		Scientific and research work **ECTS 20**	
		Scientific and research work **ECTS 4**	Scientific and research work **ECTS 16**
			Final attestation **ECTS 10**
2 exams	3 exams	2 exams, 2 assessments (practice report)	1 assessment (practice report), 1 state examination in specialty, defense of Master's thesis
Semester total: **ECTS 30**	**Semester total:** **ECTS 30**	**Semester total:** **ECTS 30**	**Semester total:** **ECTS 30**
Elective course 40 ECTS (66,7%)		**Elective course 60 ECTS (100,0%)**	

B-7.2 Diploma Supplement and qualification certificate

Along with Addendum to diploma (Transcript), providing information about the individual achievements in studied disciplines, practical training and diploma work resp. master's thesis, since 2013 Diploma Supplements in the form commonly know in the EHEA is handed to graduates of the HEI. In the Diploma Supplements there are providing more detailed information on the study programme, study goals, intended learning outcomes.

In the ***Appendix 5*** there is a copy of Diploma Supplements in the form commonly know in the EHEA of graduate of 2013 on programme 5B071800 Electric Power Engineering (Bachelor of Technics and Technology).

The Diploma Supplements in the form commonly know in the EHEA is handed with Addendum to diploma (Transcript), form which is approved by MES of the Republic of Kazakhstan (See the ***Appendix 1***).

- Appendix 1. Addendum to diploma (Transcript)
- Appendix 2. Transfer
- Appendix 3. Objectives matrix (the correlation of aims, competences and modules of the study programmes)
- Appendix 4. The rules of filling the transfer of credits
- Appendix 5. Diploma Supplements in the form commonly know in the EHEA.

E Final Assessment of the peers (06.09.2013)

The peers found the **additional information** provided by the institution to be meaningful.

Taking into account the additional information and the comments given by the HEI, the peers summarize their analysis and **final assessment** as follows:

The peers acknowledge the HEI's careful reading of the audit report and its overall constructive and forward-looking comments. In particular, they take notice of the revision of the learning outcomes and also of the revised curricula of the study programmes under consideration (though they found it difficult to recognize whether these changes have been implemented already or not).

In detail, the peers comment on the HEI's statement as follows:

Acknowledgement of achievements in part-time study (ASIIN-criteria 1, 3.2, 2.5)

Peers are thankful for the corrective information concerning the study fees and, especially, the part-time Bachelor's programme Electrical Power Engineering.

With regard to the latter, they understand that the HEI awards 240 ECTS points for completing the programme, irrespective of the study mode (part-time or full time). In the part-time mode 60 ECTS of a total 240 ECTS are awarded for previous learning achievements either in vocational schools or in other HEIs. The table, which has been provided along with the statement of the HEI (Supplement 2), clearly demonstrates that the above mentioned 60 ECTS almost entirely cover topics of the first academic year or, alternatively, issues mainly related to general educational objectives (like Physical Training) which are not part of the technical curriculum in the specialty. Unfortunately, the Addendum to the diploma (Supplement 1) confirms only barely the awarding of 240 ECTS to *part-time graduates* of the said Bachelor's programme, since there is no clear reference to the *part-time mode of the study*. Moreover, the study programme itself is identifiable only by number, not by name (Electrical systems and networks), which might, of course, be attributed to an incorrect translation. However, the peers assume the argument of the HEI reliable and the procedure of recognition, as described and illustrated in the statement, as binding. This is confirmed by the figures and information in the attached Diploma Supplement (Supplement 5) which refers to a graduate in the part-time mode of study. Nevertheless, the peers suggest indicating unmistakably the study mode of the respective programme in the Addendum to the diploma.

In consequence, a requirement referring to that point – as formulated preliminary – seems no longer necessary.

Learning outcomes (ASIIN-criterion 2.2)

The peers generally welcome the revision of learning outcomes undertaken by the HEI in order to more accurately relate these outcomes to course content and teaching, especially with a view to "new competencies […], aiming at future developments in different subject areas and the respective curricular content at different levels". They receive the impression that these learning outcomes (referring to the "new curricula", as the objectives matrices (Annex 3) show) indeed reflect a more comprehensive understanding of possible learning outcomes in the sense of knowledge, skills and competences. Otherwise, concerning the Bachelor's study programmes, the first 23 objectives are almost identical, very generic in nature and not focused on the programme-specific qualification profiles of the graduates (after all, some of them seem to be adopted directly from the respective Subject-specific Criteria of the Technical Committee

02 – Electrical Engineering and Information Technology). In addition, they are largely redundant and might be structured more consequently along the different categories (knowledge, skills and competences). Concerning the Master's programme Electrical Power Engineering, the distinctive learning outcomes for the scientific and pedagogical direction of study on the one side and the profession oriented on the other have been omitted (in contrast to their original version).

Most importantly however, these learning outcomes are supposed to reflect the *revised* curricula, thus making it impossible for the peers to assess whether they are consistent with the module content and related learning outcomes on the modular level. This would require the peers to check the module descriptions for the *new* curricula, which are – understandably – not at hand yet.

In effect, the peers take positive notice of the HEI's efforts to define precise and subject-referring learning outcomes for the degree programmes under consideration. Since the revision of learning outcomes has been conducted primarily to identify and state "new competences, aiming at future developments in different subject areas and the respective curricular content at different levels" which are – as far as can be judged from the study plans – to a certain extent also reflected in the curriculum, the peers deem it adequate to modify the requirement which originally has been held necessary to this end. Thereby the above discussed deficits of the revised learning outcomes should be addressed (see below requirement 3).

Recognition of qualifications (ASIIN-Criterion 2.5)

The peers take note of the additional information concerning the recognition of (academic) activities completed at other, in particular foreign HEI's. Due to the fact that Kazakhstan is member of the European Higher Education Area (EHEA) and has adopted the Lisbon Convention as legal binding regulation, they understand the respective "Rules" (Supplement 4) in the light of these conditions and consider the chapters 4 to 6 of the "Rules" (the poor translation notwithstanding) to be in accordance with the Lisbon Convention.

In consequence, the peers conclude a requirement forcing the HEI to adopt rules for the recognition of activities completed at other, especially foreign HEIs to be dispensable.

Curricula, modularization and module descriptions (ASIIN-Criteria 2.3, 2.6, 3.1)

The most serious consequences the peers confronted in the HEI's statement result from the revision of the curricula the HEI has initiated in the meantime. Although the status of the implementation in this regard is yet unclear, the peers consider the revised curricula as authoritative.

Thus, it is appreciated that the HEI has clarified its concept of modularization to a large extent (i.e. in regard to the Bachelor's degree programmes). In the Bachelor's degree programmes at least, the curricula are composed of clearly identifiable coherent and consistent units of teaching and learning, which might assemble two or more units/courses. The "modules" presented earlier in the procedure, either in the form of single courses (as assumed by the peers) or in the form of "container modules" (as denoted in the original study plans), are obsolete in favour of a more convenient conception of "modules". Whether these "new" modules adequately reflect their respective content and learning outcomes by name and conception cannot be judged, because module descriptions *reflecting this revision* are not available. Therefore, it is difficult to decide to what extent the "new modules" substantially equate the former modules/courses. Not only have the names of the modules been altered in many cases. There are also indications that some modules have been substantially new designed or been added.

While the "new curricula" may be considered a reasonable further development in general, it is indispensable that the "module" descriptions need to be worked out in order to adequately reflect this development. The peers therefore explicitly stress the necessity of a requirement regarding the related shortcomings (see below requirement 2).

Although the clarification of the module conception is appreciable principally, it apparently does not apply to the "new" Master's curriculum, at least not in comparable consequence. In fact, there are also newly shaped modules, which more easily than in the Bachelor's programmes' case can be recognized as emerging from of the original curriculum. But, on the other hand, there are such "modules" as "Modern techniques and technologies in electric-power" (18-20 ECTS), "Fundamentals of scientific research" (17 ECTS), "Technical Support of Experiment" (20 ECTS) which are evidently comprised of more or less separate learning and teaching units, forming in themselves "modules" in the more convenient sense. This leaves the question of the underlying idea of modularisation still open. Therefore, the peers concluded that the HEI still needs to consequently clarify its concept of "modules" (see below requirement 1). If the revised curricula for the Bachelor's programmes are to be the model for that – as the peers assume –, it should be applied to the Master's curriculum as well.

Furthermore, the revised study plans for the degree programmes under consideration apparently are exemplary in the sense that they, for the first time, also cover elective modules (in contrast to the original study plans). But mandatory and elective modules are not visible as such, since mere percentage figures of electives are provided in the tables. While this gives a full impression of *possible* courses of study (a catalogue of electives has been missing so far, see below requirement 2), it makes a concluding appraisal of the curriculum in its disciplinary substance all the more difficult.

Whether attributable to this or not, the average workload per semester of 30 ECTS is not generally comprehendible in the revised study plans. The peers deem this information necessary and to be communicated to students and applicants in an adequate and plausible manner. Accordingly, they recommend adding the requirement that deals with the conception of modularisation appropriately (see below requirement 1, second clause).

Diploma Supplement (ASIIN-Criterion 7.2, 2.2)

The peers appreciate the attached Diploma supplement for the Bachelor's Programme Electric Power Engineering (part-time mode). Generally, they state that a sample of the Diploma Supplement has to be provided *for each study programme*. They also received the impression that the learning outcomes blend original and revised formulations. Otherwise, it should be positively noted that the Diploma Supplement, inter alia, details the professional qualification the graduate has acquired. Still, there is no information allowing for a comparative assessment of the graduates final grade (according to the ECTS User's Guide; like, for instance, statistical data about the grading in his/her respective cohort). All in all, the peers propose modifying the respective requirement that has been foreseen in regard to the diploma supplement accordingly (see below requirement 4).

For the award of the ASIIN seal:

Apart from the modifications substantiated above, the peers confirm their previous assessment.

For the award of the EUR-ACE® Label:

The peers deem that the intended learning outcomes of the degree programmes under review and their realization in the curricula are in accordance with the engineering specific part of

Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering and Information Technology. Therefore, they recommend the award of the EUR-ACE® label.

The peers recommend the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific labels[1]	Accredited until (maximum duration)
Ba Instrument Engineering	With requirements for one year	EUR-ACE®	30.09.2019
Ba Electric Power Engineering	With requirements for one year	EUR-ACE®	30.09.2019
Ma Electric Power Engineering	With requirements for one year	EUR-ACE®	30.09.2019

Requirements and recommendations for the different seals:

Requirements	**ASIIN**
For all degree programmes	
1. "Modules" need to be depicted accurately, thereby defining coherently and consistently the units of teaching and learning, and shall be assessed accordingly. The revised curricula/study plans must indicate mandatory and elective modules and comprehensibly demonstrate the average student workload per semester (30 ECTS).	3.1
2. The course descriptions must be updated with respect to the adapted classification of modules, thus indicating *inter alia* the individual module content, the learning outcomes of the module, the students' workload, differentiated with respect to class attendance and other forms of presence at the HEI and hours of self study. Moreover, descriptions of, at least, a representative sample of electives have to be presented. Inconsistencies of name and credit allocation in the module descriptions and study plans need to be corrected.	2.3
3. The *revised* learning outcomes must clearly refer to programme specific qualifications and, moreover, plausibly reflect the *revised* curricula and modules.	2.2,

[1] Requirements / recommendations and expiring dates for Subject-specific labels always correspond to the ASIIN-seal.

They also need to be regarded in the Diploma Supplements. In case of the Master's programme they also need to take into account the different orientations of study.	7.2
4. A Diploma Supplement must be provided for each programme. In addition to the final grade, statistical data according to the ECTS User's Guide must be indicated in order to provide for a comparative grading of the final grade.	7.2

Recommendations

For all degree programmes	**ASIIN**
1. It is recommended to further implement the quality management concept and to use the data collected for continuous improvement. In particular, students should participate in the evaluation process and the use of its results on a regular basis. Furthermore, the collection of data should also include information about students' actual workload in order to allow for adjustments of the corresponding credit allocation, if necessary.	6.1, 6.2
2. It is recommended to continuously refurbish the laboratory equipment and replace out-dated apparatuses and machinery in order to strengthen the research capabilities of the Department (e.g. in cooperation with industrial companies).	5.3
3. It is recommended that, regarding the programmes' educational objective of internationality, existing efforts for enhancing English language skills and to offer English-medium courses in the curriculum should be strengthened. In this respect cooperation with other HEIs, in particular HEIs abroad, should be further developed.	3.3
4. It is strongly recommended that, with respect to international competitiveness, scientific/research aspects in the programme should be intensified in keeping with the latest developments.	3.3

F Comments of the Technical Committee 02 – Electrical Engineering and Information Technology (11.09.2013)

The Technical Committee substantially agrees with the requirements and recommendations of the peers. It only proposes some editorial modifications in requirement 3 concerning the learning outcomes of the study degree programmes (replace "need to" with "have to").

For the award of the ASIIN seal:

The Technical Committee agrees with the peers, thereby proposing the above said editorial modifications.

For the award of the EUR-ACE® Label:

The Technical Committee deems that the intended learning outcomes of the degree programmes under review and their realization in the curricula are in accordance with the engineering specific part of Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering and Information Technology. Therefore, it recommends the award of the EUR-ACE® label.

The Technical Committee 02 – Electrical Engineering and Information Technology recommends the award of the seals as follows:

Degree Programme	**ASIIN-seal**	**Subject-specific labels**	**Accredited until (maximum duration)**
Ba Instrument Engineering	With requirements for one year	EUR-ACE®	30.09.2019
Ba Electric Power Engineering	With requirements for one year	EUR-ACE®	30.09.2019
Ma Electric Power Engineering	With requirements for one year	EUR-ACE®	30.09.2019

Editorial Modifications proposed by Technical Committee 02:

Requirement	**ASIIN**
3. The revised learning outcomes must clearly refer to programme specific qualifications and, moreover, plausibly reflect the *revised* curricula and modules. They also have to be regarded in the Diploma Supplements. Additionally, in case of the Master's programme, the-learning outcomes have to take into account the different orientations of study.	2.2, 7.2

G Decision of the Accreditation Commission (27.09.2013)

The Accreditation Commission for Degree Programmes discusses the procedure. With respect to the consistency of its decisions and a fair assessment of the HEI's technical infrastructure it chooses a minor modification in recommendation 2, relating to the laboratory equipment.

Decision about the award of the ASIIN seal:

With the above mentioned modification the Accreditation Commission agrees fully with the assessment of the peers and the Technical Committee.

Decision about the award of the EUR-ACE® Label:

The Accreditation Commission finds that the intended learning outcomes of the degree programmes under review and their realization in the curricula do comply with the engineering specific parts of the Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering and Information Technology. Therefore, it approves the award of the EUR-ACE® label.

The requirements and recommendations for the award of the ASIIN-seal are equally valid for the before-mentioned label.

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

Degree Programme	ASIIN-seal	Subject-specific labels	Accredited until (maximum duration)
Ba Instrument Engineering	With requirements for one year	EUR-ACE®	30.09.2019
Ba Electric Power Engineering	With requirements for one year	EUR-ACE®	30.09.2019
Ma Electric Power Engineering	With requirements for one year	EUR-ACE®	30.09.2019

Requirements and recommendations for the seals to be awarded:

For all degree programmes	**ASIIN**
1. "Modules" need to be depicted accurately, thereby defining coherently and consistently the units of teaching and learning, and shall be assessed accordingly.	3.1

The revised curricula/study plans must indicate mandatory and elective modules and comprehensibly demonstrate the average student workload per semester (30 ECTS).	
2. The course descriptions must be updated with respect to the adapted classification of modules, thus indicating inter alia the individual module content, the learning outcomes of the module, the students' workload, differentiated with respect to class attendance and other forms of presence at the HEI and hours of self study. Moreover, descriptions of, at least, a representative sample of electives have to be presented. Inconsistencies of name and credit allocation in the module descriptions and study plans need to be corrected.	2.3
3. The revised learning outcomes must clearly refer to programme specific qualifications and, moreover, plausibly reflect the *revised* curricula and modules. They also have to be regarded in the Diploma Supplements. Additionally, in case of the Master's programme, the-learning outcomes have to take into account the different orientations of study.	2.2, 7.2
4. A Diploma Supplement must be provided for each programme. In addition to the final grade, statistical data according to the ECTS User's Guide must be indicated in order to provide for a comparative grading of the final grade.	7.2

Recommendations

For all degree programmes	**ASIIN**
1. It is recommended to further implement the quality management concept and to use the data collected for continuous improvement. In particular, students should participate in the evaluation process and the use of its results on a regular basis. Furthermore, the collection of data should also include information about students' actual workload in order to allow for adjustments of the corresponding credit allocation, if necessary.	6.1, 6.2
2. It is recommended to continuously refurbish the laboratory equipment and update apparatuses and machinery in order to strengthen the research capabilities of the Department (e.g. in cooperation with industrial companies).	5.3
3. It is recommended that, regarding the programmes' educational objective of internationality, existing efforts for enhancing English language skills and to offer English-medium courses in the curriculum should be strengthened. In this respect cooperation with other HEIs, in particular HEIs abroad, should be further	3.3

developed.	
4. It is strongly recommended that, with respect to international competitiveness, scientific/research aspects in the programme should be intensified in keeping with the latest developments.	3.3