



ASIIN Accreditation Report

Bachelor's and Master's Degree Programmes
Automation and Control

offered by

**D. Serikbaev East Kazakhstan State Technical Uni-
versity**

Last update: 27.09.2013

Basic information about the accreditation procedure

Degree programmes	Bachelor's and Master's Degree Programme Automation and Control
Higher Education Institution	D. Serikbaev East Kazakhstan State Technical University (EKSTU)
Seals applied for	<p>The Higher Education Institution has applied for the following seals and labels:</p> <ul style="list-style-type: none"> • ASIIN Seal for the degree programmes • EUR-ACE® Label for the degree programmes
Peer panel	<p>Prof. Dr.-Ing. Axel Hunger, University of Duisburg-Essen</p> <p>Prof. Dr. sc. techn. Harald Loose, Brandenburg University of Applied Sciences</p> <p>Prof. Dr.-Ing. habil. Dietmar Schulze, Ilmenau University of Technology</p> <p>Kay Zwingenberger, Siemens (did not participate in site-visit)</p>
ASIIN Procedure Manager	Jana Möhren
On-site visit	The on-site visit took place on 06-08 May 2013.

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A Preliminary Remark

The on-site visit for the above mentioned degree programmes took place on 06-08 May 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. Hunger was asked to act as speaker of the audit team for the aforementioned degree programmes.

The peers had discussions with the following groups:

University management, responsible managers of degree programmes, teaching staff, students.

Additionally, the auditors inspected the infrastructure and the technical equipment at East Kazakhstan State Technical University in Ust-Kamenogorsk.

The following chapters relate to the Self Assessment Report (hereinafter SAR) provided in December 2012 as well as to the discussions and information provided during the on-site visit 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 (HEI). 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 the subsequent information. The statement of the HEI is included in a summarized manner. 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 Report of the peers (Accreditation Report)

B-1 Formal specifications

a) Name and awarded degree	d) Study mode	e) Programme Duration & Credit points	f) First & annual enrolment	g) Expected intake	h) Fees
Automation and Control/ Bachelor	Full time	8 semesters 222,5 ECTS/CP	1991 Autumn semester	40 per year	2350 US\$
Automation and Control/ Master	Full time	4 semester 119,28 ECTS/CP	2006 Autumn semester	5 per year	2860 US\$

Analysis of the peers:

The peers found the names, degrees awarded and programme duration to be satisfying. Taking into account that the secondary school has a duration of only 11 years, they considered it reasonable that the Bachelor's degree programme is composed of 8 semesters. The peers discussed with the university the expected low intake for the Master's degree programme but learned that the number is due to the fact that the Bachelor's degree programme in its current form has only been offered for a few years and thus has not yet produced a significant number of graduates. It is expected that the intake for the Master will rise with growing demand.

Assessment of the peers:

Criterion 1 Formal specifications

The peers considered the formal specifications of the degree programmes under review to comply with the criterion.

B-2 Degree Programme: content concept & implementation

B-2-1 Objectives of the degree programme

B-2-2 Learning outcomes of the programme

As **objectives of the degree programmes** the institution states the following in the self-assessment report:

- Preparation of the graduate for service-operational activity in the field of operation of automatic, automated and information systems, transmission media of the given and information streams, diagnosing, control, their technical, information, mathematical and the software.
- Preparation of the graduate for industrial-technological activity for developing and introductions of optimum manufacturing techniques of means of automation, information and equipment operation.
- Preparation of the graduate for organizational - administrative activity for the organization of work, acceptance of administrative decisions.
- Preparation of the graduate for design activity for working out, designing, modelling and performance of projects of automation, information of industrial and technological processes taking into account technological and economic indicators.
- Preparation of the graduate for experimental scientific-research for carrying out analytical and experimental works and research for diagnostics and estimating a condition of units and technological processes using necessary methods, control devices and analysis.
- Preparation of the graduate for scientific and pedagogical activity for carrying out research and experimental works using necessary methods and control facilities, control and analysis.
- Preparation of the graduate for independent training and development of a new professional knowledge and abilities, for continuous professional self-improvement

As **intended learning outcomes of the degree programmes** the institution states:

Common cultural competence

- Ability to apply basic and special knowledge in the field of mathematical, natural, humanitarian and economic sciences in complex engineering activities on the basis of a complete system of scientific knowledge.
- To show understanding of the essence and value of information in developing a modern society, possession of the basic methods, ways and means of reception, storage, information processing; use of modern communicative means and information technology.

- Ability to independently apply methods and means of knowledge, training and self-checking, to realize perceptivity of intellectual, cultural, moral, physical and professional self-development and self-improvement, to be able to estimate critically the merits and demerits.
- Ability to effectively work individually and as the member of teams, showing skills of a control of separate groups of participants, including cross-disciplinary projects, to be able to show a personal responsibility, adherence to a professional etiquette and norms of conducting professional work.
- To show knowledge of legal, social, ecological and cultural aspects of complex engineering activities, awareness in questions of health protection, and work environments.
- To carry out communications in the professional environment and in a society as a whole, including in a foreign language; to analyze existing and to develop independently new engineering specifications; accurately to state and protect results of complex engineering activities in the field of automation and control.

Professional competence

- Ability to use organic laws of natural-science disciplines, methods of mathematical analysis and modelling, basic theoretical and an experimental research in complex engineering activities in the field of automation and control.
- Ability to master the entered new equipment, to check technical conditions and residual resources of operative equipment of systems of automation, in case of need to provide a damage control on industrial sites of enterprises.
- Ability to make experiments by set techniques with processing and the analysis of results to apply methods of standard tests of systems of automation and control.
- Ability to provide the preliminary feasibility report on design decisions to carry out organizational-planned calculations on creation or reorganization of industrial sites, to plan work of personnel and payment funds, to apply progressive methods of operation of equipment of systems of automation and control.
- Ability to apply standard methods of calculation of elements and systems of automation and control, to carry out construction work and to make out the design and technological documentation according to standards, specifications and other standard documents, including the use of computer design tools.
- Readiness to make engineering specifications (schedules of works, instructions, estimates, plans, demands for materials and the equipment), to perform works on standardization, technical training to certification of means, systems, processes, the equipment and materials to organize metrological maintenance of technological processes.
- Ability to participate in innovative projects, using the basic methods of research activity based on regular studying the scientific and technical information, as well as domestic and foreign experience.
- Ability to apply modern methods for working out of power saving up and non-polluting systems of automation and the control, providing safety of people and their protection against possible consequences of failures, accidents and acts of nature.

The intended learning outcomes are published on the university's website in their original language.

Analysis of the peers:

The peers discussed with the university representatives the need to differentiate the intended objectives and learning outcomes for the Bachelor's and for the Master's degree programmes. They commended the first efforts made by the university to this regard with the use of the Dublin Descriptors and explained that these descriptors must be specified from their general nature to fit the specifics of the degree programmes. They found that the main intention of the university with regards to the Bachelor's programme is to prepare the students for operational and experimental as well as pedagogical tasks with regard to control and information engineering whereas the Master's degree programme aims at scientific and pedagogic activities. Altogether, the peers gained the impression that the objectives of the programmes are suitable to prepare the graduates for professional careers in their field and the students reach the intended aims.

Assessment of the peers

Criterion 2.1 Objectives of the degree programme

Criterion 2.2 Learning outcomes of the programme

As additional documentation, the peers asked for the written version of the intended objectives and learning outcomes separated for both programmes. While they gained a good overall impression of the aims of the programmes as described by the university during the discussions, they will only be able to make their final assessment about the fulfilment of these criteria after the submission of this additional documentation.

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

The peers deemed that the intended learning outcomes of the degree programmes under review as they have been described during the onsite visit principally comply with the engineering specific part of Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering and Information Technology. However, before being able to make a final assessment on the fulfilment of the EUR-ACE criteria, they will need the above mentioned documentation.

B-2-3 Learning outcomes of the modules/module objectives

The **objectives of individual modules** are published in the module descriptions (syllabus).

The module descriptions are available to the students and other interested persons digitally on the internet and in printed form.

Analysis of the peers:

According to the peers, the descriptions of the module objectives (intended learning outcomes) were well accomplished and facilitate the orientation of both teachers and students as to the expectations for the different modules. Nevertheless, they also found that some module descriptions were missing, e.g. for the teaching practice and practical training modules and that some modules were not described individually, e.g. for mathematics. The peers also noticed that the literature lists were quite extensive so that they deemed that students would not be able to read all mentioned literature but rather be overwhelmed, rendering the literature lists less useful. To this regard, they also discussed with the lecturers the use of more English language literature in order to facilitate the desired international exchanges of students and staff.

Assessment of the peers:

Criterion 2.3 Learning outcomes of the modules/module objectives

While finding the module learning outcomes to principally support the achievement of the respective programme objectives, the peers asked for the missing module descriptions as additional documentation before making a final assessment on all aspects of this criterion.

The peers also found it necessary that separate module descriptions are available for each module. Furthermore, they recommended amending the list of literature in the module descriptions in order to make it more usable for students and to also include English language literature.

B-2-4 Job market perspectives and practical relevance

The HEI mentions the following job perspectives for the graduates:

For graduates of the Bachelor's degree programme as heads of sites or manufacturing industry, as engineering related designers or engineers in federal organizations or equipment operation or as supervisors for technical workers.

For graduates of the Master's degree programme in companies dealing with automated control systems of technological processes, manufacturing, automated information-operating systems or data processing.

Practical relevance of the programmes shall be achieved by:

Several types of practical elements are foreseen in the Bachelor's degree programme: short term excursions, teaching practice, labs within the university, a pre-diploma practice serving as preparation of the Bachelor's thesis. External practical placements are organised by the department through contracts with companies or external institutions. Teaching staff is appointed as supervisor for each student. Students have to keep a diary on their activities and produce a report which serves as basis for grading the placement.

Analysis of the peers:

Based on the self-assessment report and the discussions onsite, the peers estimated the job market perspectives of the graduates to be very good. They learned that 90 % of the graduates find employment immediately after graduation. Furthermore, the peers commended the good contacts of the involved lecturers to the local industry. With regard to the internships in place, the peers found it reasonable that they take place both in schools and in companies as employment both in education and the industry are expected from graduates. The laboratories in the university were found to be well developed.

Assessment of the peers:

Criterion 2.4 Job market perspectives and practical relevance

The peers found the immersion into practical activities through laboratories with the university as well as the several internships to be adequate and thus this criterion to be fulfilled.

B-2-5 Admissions and entry requirements

Admission rules for the Bachelor's and for the Master's degree programme are stipulated by orders of the national Ministry of Education and Science.

For the Bachelor's degree programme the completion of secondary education as well as the participation in a unified national test are required. The university accepts only students which achieve a score of at least 50% in this test.

For the Master's degree programme the entrance requirements are additionally stipulated in the document DP 705-I-2012 "Forming of the Contingent for Master's and Doctor PhD courses". It foresees the completion of a first higher education programme. Additionally, the results of the participation in entrance examinations in a foreign language and a special disciplinary exam must be provided. Students who do not fulfil all necessary

entrance requirements have the possibility to attend additional courses in order to fill the gaps. Participation in these courses has to be paid for.

Rules for the recognition of external study attainments/achievements are stipulated in the EKSTU document 706-II-2012 “Transfer and Restitution of D. Serikbaev EKSTU Students” and regulate that transfers from other Kazakh or foreign institution can be made when no more than five core disciplines differ. This is judged against a transcript of the academic record.

Analysis of the peers:

The peers discussed the admission rules and procedures with the university representatives. Since the school graduates with the highest grades are awarded government grants and can choose their preferred university, they considered the number of students with such grants and thus the quality of the students to be satisfactory. They also took into account that the overall number of applicants is rather low due to the demographical situation in the country. As to the number of students in the Master’s degree programme, the peers agreed with the university that the low number of students does not relate to the admission procedures, which they deemed adequate, but rather to the limited number of students grants available.

Assessment of the peers:

Criterion 2.5 Admission and entry requirements

While the university only had limited influence on the national admission rules to higher education, in the opinion of the peers this criterion is fulfilled.

B-2-6Curriculum/content

The overview of the curricula is provided below.

The modules are partially taught by lecturers and professors of the faculty but also by teaching staff from other faculties and departments of the institution.

Bachelor's degree programme

1 semester	2 semester	3 semester	4 semester	5 semester	6 semester	7 semester	8 semester
Kazakhstan History ECTS 4,5	Philosophy ECTS 4,5	Special sections of mathematics ECTS4,5	Theoretical bases electrical engineers ECTS4,5	The theory linear automation systems development ECTS4,5	The theory nonlinear systems of automation control ECTS4,5	Bases of safety for ability to live ECTS3	Pre-degree practice ECTS 7,5
Kazakh (Russian) language ECTS 4,5	Kazakh (Russian) language ECTS 4,5	Theoretical bases electrical engineers I ECTS4,5	Digital devices of automatics ECTS4,5	The applied theory of the information ECTS 4,5	Systems of automation design in automation systems ECTS 4,5	Automation of typical technological processes ECTS 4,5	Total state certification ECTS 10,5
Foreign Language ECTS 4,5	Foreign language ECTS 4,5	Electronics ECTS4,5	Metrology and measurements ECTS 4,5	Microcontrollers in control systems ECTS 4,5	Designing of microprocessor systems of automated control ECTS 4,5	The software of control systems ECTS 4,5	
Mathematics I ECTS 4,5	Mathematics II ECTS 4,5	Bases of construction of modern control systems ECTS3	Measuring converters ECTS 4,5	Reliability of technical systems ECTS 3	Modeling and identification objects of control ECTS 4,5	Installation and operation of automatic systems ECTS 4,5	
Computer science ECTS 4,5	Technology of programming ECTS4,5	Professional Kazakh (Russian) language ECTS 3	Elements and automatics devices ECTS 4,5	Microprocessor complexes in control systems ECTS 4,5	Programming for controllers in language C++	Modern technologies of automation ECTS 4,5	

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					ECTS4,5		
Ecology and sustainable development ECTS 3	Physics II ECTS4,5	Professional-oriented foreign language ECTS 3	Political science ECTS3	Electronic converters of signals ECTS3	Bases of automation of manufacture ECTS4,5	Digital control systems ECTS 4,5	
Physics I ECTS 4,5	Bases of economic theories ECTS 3	Sociology ECTS3	Industrial practice ECTS 5	Justice bases ECTS3	Technological practice ECTS 5	Economy and the manufacture organization ECTS3	
	Educational practice ECTS1						
30 ECTS	31ECTS	25,5 ECTS	33,5 ECTS	27 ECTS	32 ECTS	28,5 ECTS	18 ECTS

Master's degree programme

1 semester	2 semester	3 semester	4 semester
History and science philosophy ECTS6	Pedagogics ECTS6	Intellectual control systems ECTS6	Research practice ECTS14,5
Foreign language (professional) ECTS6	Kazakh language ECTS6	Mathematical modeling of objects and control systems ECTS9	Scientific-research work ECTS9,6
Psychology ECTS6	The organization and planning of scientific researches ECTS 9	Bases of the theory of optimum control ECTS9	Complex examination, registration and protection master's Dissertations ECTS16,8
Modern theories, methods and means of creation of systems of automation and control ECTS6	Environments and programming languages ECTS 9	Methods of synthesis of control systems in space conditions ECTS9	
Automation of technical systems ECTS6	The system analysis ECTS 9	Students' teaching ECTS3	
Master's research work, including performance of magister dissertations ECTS4	Research work of masters, including performance magister dissertations ECTS8	Research work of masters, including performance magister dissertations ECTS8	
35 ECTS	48,5 ECTS	46 ECTS	40,9 ECTS

Analysis of the peers:

In analysing the curriculum of the degree programmes under review, the peers took into account the fact that it is prescribed by the Ministry of Science and Education and that the individual higher education institutions in Kazakhstan have only limited possibilities to change the modules and courses. Nevertheless, the peers discussed with the university how the curriculum suited the achievement of the intended aims, specifically with view to the engineering profession. They discussed the contents of the physics module which seemed to repeat some topics from electro-technics but lacking in areas such as dynamics, thermodynamics and mechanics. However, they learned that the discrepancy occurred only due to missing translations in the module descriptions. A module description provided during the onsite visit eliminated the concerns of the peers.

Overall, the peers found the curriculum to be little oriented towards application, such as in areas like power engineering or process automation. They concurred with the intention of the university to make use of practical training in companies to strengthen the acquirement of skills by the students but also underlined that the curricular content itself should include application areas of the subject.

The peers also noticed positively that international exchange is a mandatory part of the Master's degree programme and encourage its extension, specifically with non-Russian-speaking countries.

Assessment of the peers:***Criterion 2.6 Curriculum/content***

A decision of the suitability of the curriculum to foster the achievement of the intended learning outcomes could only be taken after the above mentioned additional documentation is provided. Nevertheless, while the peers found the curricular contents to be overall adequate, they considered that the programmes could be enhanced by including application-oriented subjects into the curriculum in order to strengthen the graduates' ability to work as engineers.

For the award of the EUR-ACE® Label:

A decision of the suitability of the curriculum to foster the achievement of the intended learning outcomes the award of the EUR-ACE[®] label could only be taken after the above mentioned additional documentation is provided.

B-3 Degree programme: structures, methods and implementation

B-3-1 Structure and modularity

The modules have the following size: In the Bachelor's degree programme modules have between 3 and 13,5 ECTS, with 10,5 ECTS foreseen for the final project and thesis. In the Master's degree programme modules have between 6 and 12 ECTS, with 53,4 foreseen for the final master's work composed of research and a report.

The university intends to facilitate international exchange of students by having concluded cooperation agreements with Lublin Technical University in Poland and Obuda University in Hungary.

Analysis of the peers:

The modularisation and the structure of the curriculum were found to allow for the completion of the degree programme in time as well as for international exchange as all modules can be completed within one semester.

Assessment of the peers:

Criterion 3.1 Structure and modularity

The peers considered the criterion to be fulfilled.

B-3-2 Workload and credit points

According to the institution, 1 ECTS credit equates to 25 – 30 hours of student workload. ECTS are calculated by converting the locally used Kazakh credits. One Kazakh credit is awarded for 45 hours of student workload in the Bachelor's and for 60 hours of student workload in the Master's degree programme. This calculation is based on the assumption that one Kazakh credit equals 15 academic hours. According to the self-assessment report, one academic hour in the Bachelor is composed of 1 hour of classroom and 3 hours

of independent work. On academic hour in the Master is composed of 1 hour of class-room and 5 hours of independent work.

Different conversion factors are used to convert Kazakh credits into ECTS, also depending on the form of teaching (lecture, practice, final thesis).

Based on these calculations, each semester between 18 and 33,5 ECTS are awarded in the Bachelor's degree programme, between 35 and 48,5 ECTS in the Master's degree programme.

Credits for practical placements are awarded after the defence of a report.

Analysis of the peers:

The peers discussed the students' workload, use of credit points and conversion of Kazakh credit points into ECTS with the university representatives. The calculation described in the self-assessment report contrasted with the finding of the peers that the sum of all contact hours (lectures, seminars, practice) was multiplied by two. The hours of the so-called self-study period were added and the result divided by 30. Moreover, the peers found that so-called self study period (SRSP) during which students independently solve problems but a lecturer is present and provides help upon request were widely in use and appreciated by the students. Furthermore, the peers discussed that the lines between different teaching forms were blurred as lecturers also used practical classes for theoretical lectures in order to provide additional explanation. The calculation of the work load of the students thus remained unclear and the peers discovered some irregularities in the conversion methods used by the university. In particular, it was not clear why the basis for credits were different in the Bachelor's and in the Master's degree programme. While the students reported that on six days of the week the contact hours were between six and eight hours, based on the written calculations the peers found that the expected workload in the Master's degree programme is up over 80 hours per week.

Assessment of the peers:

Criterion 3.2 Workload and credit points

In order to gain a full understanding of the student workload, its distribution between different types of learning as well as the actual conversion into ECTS, the peers asked for the educational plans (as shown in Russian on site) as additional documentation. Based on the information available, the peers found that the conversion into ECTS and the resulting workload did not comply with the ECTS guidelines and thus requested that the calculation from Kazakh into ECTS credits is corrected. As the workload, especially in the

Master's degree programme exceeds a realistic amount. It must be ensured that the workload per semester does not exceed 900 hours (equalling 30 ECTS) per semester in line with the ECTS Users' Guide A.

B-3-3 Educational methods

According to the self-assessment report, the following educational methods are in use: lectures, practice sessions and labs.

The university states using an approach of problem-oriented training which is designed to enable students to actively apply the theoretical knowledge gained and to solve problems by using analysis. Furthermore, an interdisciplinary approach is used in the Master's degree programme by grouping students from different areas and asking them to jointly solve problems.

Options for elective modules are available.

Analysis of the peers:

The peers questioned the teaching forms in use as the documents showed only one hour of lecture per module. They learned that the division of teaching methods within the modules is prescribed by the so-called State Standards but that theoretical teaching also occurred in the practical classes and labs. A large importance was also given to the self-study of students. To this regard, the peers noted positively that student projects and initiatives were supported by the university. They also acknowledged that some lecturers employ modern didactic methods such as project-oriented teaching which the university claimed to enhance the social skills of the students. The peers deemed this approach to be sensible but noted that social and non-technical skills can and should also be included in the technical modules.

Furthermore, the peers found that lectures in the basic modules are offered separately for each degree programmes offered by the university and thus could be adapted to the requirements of the specific student group.

The peers discussed the option of including elective courses with the lecturers and the students. The range of selection as described during the discussions by the university ranged from up to 30% of the modules to a selection of one module out of 4. However, the inclusion of electives was not clear from the written curriculum documentation. Therefore, the peers concluded that the actual availability of elective modules was unclear.

Assessment of the peers:

Criterion 3.3 educational methods

Overall, the peers found that the educational methods, also with regard to the hours of theoretical training, were adequate to support the achievement of the programme objectives. However, they recommend combining the teaching and learning of social skills with the technical modules, specifically by using modern didactic methods.

Moreover, the peers considered it necessary that the amount of elective courses and the procedures for choosing them are made transparent in the programme documentation.

B-3-4 Support and advice

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

Student support is available through specially nominated advisors who inform the students about curricular issues, liaise with teaching staff but are also responsible for familiarizing students with the rules and regulations of the university as well as its non-curricular offer (e.g. sports, events). Each advisor is responsible for a group of students from 1-4 different courses.

For new and prospective students, open days and fairs are organized. Additionally, support for passing the nation-wide entrance exams is available.

Analysis of the peers:

During the discussions with teaching staff and with students, the peer group met with a high degree of commitment. They found that the teachers actively support student projects, by providing resources and advice and integrating the projects into the teaching modules. Teachers also were interested in fostering international exchange as well as immersion into the labour world for the students. Overall, the motivation and openness to discussion by both students and lecturers was very positively commended by the peers.

Assessment of the peers:

Criterion 3.4 Support and advice

In the opinion of the peers, the support and advice available to students was suitable so that they considered this criterion to be fulfilled.

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: computer testing, oral exams. Usually, each module is examined by so-called current controls (e.g. homework, quizzes), and intermediate and a final exam. The results of all types of controls are considered for the calculation of the module grades. In the Bachelor's degree programme, 7 exams or 6 exams and 1 course project are foreseen each semester. The types of exams used are mentioned in the module descriptions.

The final grade for each module is calculated from the results of all controls and exams within the semester. The university uses a conversion for their local grades into ECTS grades.

A final thesis is foreseen in both projects and has to be defended in an oral exam.

The **organisation of exams** is managed as follows: Two exam periods of about three weeks are planned after each semester. State exams are taken once a year and include an oral and a written part. The questions for these exams, while on three disciplines prescribed by national standards, are developed by the department responsible for implementing the respective degree programmes.

Analysis of the peers:

In addition to analysing samples of exams and final thesis during the onsite visit, the peer group discussed the exam methods, types, levels and organisation with the representatives of the university and with the students. They found that all sides were satisfied with the current exam system, especially as it allowed more flexibility and the use of different exam types compared to the previously applied system.

Assessment of the peers:

Criterion 4 Examinations: system, concept and organisation

The peers found the exam methods and system compliant with the criterion.

B-5 Resources

B-5-1 Staff involved

The programmes under review are offered by the Faculty for Information Technology and Power Engineering's Sub-department Instrument Engineering and Automation.

According to the HEI, the teaching staff involved in the programmes under review is composed of 2 full-time professors, 15 full time associate professors as well as 16 lecturers. They are members of different departments of the university.

The teaching staff described the following most important research & development activities relevant to the degree programmes and attributed to individual teaching staff: The university mentions two patents and one pending patent as well as a monograph and more than thirty articles with relevance to the programmes under review.

Analysis of the peers:

While the peers considered the overall number of teaching staff to be sufficient to properly implement the degree programmes under review, they found the number of professors and associated professors to be rather low. Resulting, the workload of most teachers is fully used up with teaching whereas the research activities in the field are very limited. The peers understood from the discussions that the university currently has difficulties in filling all open positions, especially on associate and professor level. These difficulties result from the shift to the three cycle system which caused the former (Soviet) Candidate of Science degrees to be no longer awarded in Kazakhstan whereas not yet enough persons have completed a PhD. At the beginning of each academic year, contracts with the teaching staff regarding the aspects teaching, science and research, teaching methodology and social activities are concluded. However, the peers learned that about half of the working time was used for the first element.

Assessment of the peers:

Criterion 5.1 Staff involved

As the university allocates the workload for its staff members anew at the beginning of each study year, the peers recommended considering ways to better allocate the teaching load and time for research for the lecturers. In this way, a needed increase of research should be triggered. The peers found it advisable to increase the number of associate professors and professors and commended the university's approach in upgrading their own staff's competences by fostering their pursuance of higher education.

B-5-2 Staff development

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

Staff members are encouraged to participate in national and international trainings and conferences. In the last three years, 16 staff members have participated in such events.

The university also participates in the so-called Balashak national development programme for teaching staff.

Analysis of the peers:

While the peers principally considered the existence of staff development to be positive, they noticed that a majority of the further didactical and subject-related training of lecturers took place in Russian-speaking countries. They found that the university especially encourages staff members to pursue higher degrees with a view to later engaging them as lecturers in the degree programmes on offer.

Assessment of the peers:

Criterion 5.2 Staff development

The peers considered the staff development opportunities available sufficient to demonstrate compliance with this criterion. With a view to the desired internationalization and exchange, the peers encourage the university to extend the opportunity to participate in trainings specifically in non-Russian-speaking countries.

B-5-3 Institutional environment, financial and physical resources

According to the self-assessment report, the library is divided into 17 sub-departments and includes several reading and computer halls. The IT system, including the number of computers available and the accessibility of the WIFI system have been continuously expanded in the past years. The equipment of the three laboratories mainly used for the degree programmes under review is listed in the report.

The development of the incomes and expenses of the university is described in the self-assessment report. The university stresses that the salaries are above average.

The faculty has concluded cooperation agreements with two universities in Poland and Hungary which aim at student exchange, pursuit of PhD programmes in Europe and the commitment of international professors who give guest lectures.

Analysis of the peers:

The peers considered the financial resources for the programmes to be sufficient. During the onsite visit, the peers visited the facilities used for teaching and learning of the degree programmes under review as well as a few research laboratories from different fields. They positively noted that the equipment and the laboratories were highly suited for the implementing of teaching and learning at the desired level. They discussed the availability of modern software programmes with the university and found that principally, modern versions were bought (e.g. for Matlab) were bought, whereas it was more difficult to follow all software updates.

Assessment of the peers:

Criterion 5.3 Institutional environment, financial and physical resources

While the peers found the resources available to be generally adequate in order to fulfil the requirements, they encouraged the university to ensure that the software in use for the degree programmes is continuously kept updated.

B-6 Quality Management: further development of degree programmes

B-6-1 Quality assurance and further development

According to the self-assessment report, the university has implemented a quality assurance system which is certified according to BS EN ISO 9001:2008. The system is divided into internal and external mechanisms. The external evaluation largely depends on national and international rankings of higher education institutions as well as of degree programmes. Internal quality assurance is based on public discussions of the reports of different committees and entities, staff ratings and surveys. In the framework of an internal audit, up to 10 processes of the university are assessed against the DIN ISO rules mentioned above. Furthermore, surveys among faculty, employers and students are carried out in order to determine their satisfaction. During the visit, the university explains that the results of the surveys are discussed in the Academic Council and are published on the website.

Analysis of the peers:

The peers found several elements of quality management in place. In particular, they gained the impression that student surveys were regularly used with a very high participation rate among the students. The peers also learned that the results were taken into account for decisions about staff employment. The discussions rounds confirmed that the results of the surveys were used for discussions between the deans and the lecturers.

Assessment of the peers:

Criterion 6.1 Quality assurance and further development

The peers found the quality assurance mechanisms to be suitable to allow for a continuous improvement of the teaching and learning situation at the university. They thus deemed the criterion to be fulfilled.

B-6-2 Instruments, methods & data

In the self-assessment report, the university presents the results of a satisfaction survey among graduates, students and employers as well as data of new students, drop-outs and graduates for the past three years. The university also reports about the participation in national rankings with regard to the implementation of Bologna elements, students' mobility and the degree programmes as such.

Analysis of the peers:

The peers found that the university collects data about several aspects of the degree programme, including students' progress, grades and mobility. These data were considered relevant for the university with regard to staff planning and the further development of the programmes.

Assessment of the peers:

Criterion 6.2 Instruments, methods & data

The peers found that the data collection methods are suitable for the aims of the university with regard to the degree programmes, in particular the monitoring of student numbers and progress. Therefore, they deemed the criterion to be fulfilled.

B-7 Documentation and transparency

B-7-1 Relevant regulations

The regulations mentioned below have been provided for assessment (all put into force):

- Students' Progress Midterm Control
- Final Control and Students' Progress Assessment
- Research and Scientific Production Activity
- Forming of the Contingent for Master's and Doctor PhD Courses
- Transfer and Restitution of D. Serikbaev KSTU Students
- Regulations about Practical Training
- Regulations about School Laboratory
- Procedure of Counting Credits According to ECTS in EKSTU
- Regulations about Organisation of Masters' Scientific In-Depth Training.

Analysis of the peers:

The peers found that all aspects of admission, assessment, progress and graduation of the students were regulated. All necessary information was available to teachers, students and applicants.

Assessment of the peers:

Criterion 7.1 Relevant regulations

The peers considered the criterion to be fulfilled.

B-7-2 Diploma Supplement and qualification certificate

No samples of the Diploma Supplement were provided.

Analysis of the peers:

The peers were provided with samples of diploma certificates and transcripts during the site visit. While they found these documents to be suitable, they explained that additionally, Diploma Supplements should be provided. The Diploma Supplement accompanies a higher education diploma, providing a standardized description of the nature, level, context, content and status of the studies completed by its holder. A model for these should be available from the Ministry as the template would be the same for all universities in Kazakhstan.

Assessment of the peers:

Criterion 7.2 Diploma Supplement and qualification certificate

In order to be able to assess the compliance with this criterion, the peers asked as additional document for the English language version of the diploma supplement (not transcript) for both programmes.

C Additional Information

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

1. English language version of the diploma supplement (not transcript) for both programmes
2. Written version of the objectives and outcomes separated for both programmes
3. Educational plans (details of workload)
4. Missing module descriptions (e.g. teaching practice)

D Comment of the HEI (18.07.2013)

The statements of the university are summarized in the following

B-2-2 Learning outcomes of the programme

The university states that the principles of the Bologna process, specifically the implementation of the three-cycle system is still rather new to the educational system of Kazakhstan, and that therefore the differentiation between the cycles will become clearer once a greater number of graduates has transferred into the labour market. As to the goals and objectives, the university points out that they are pre-defined in the following: Documents of the Republic of Kazakhstan 05.04.019-2011. Higher Education. Baccalaureate, GOSO RK 5.04.033-2011 "Post-graduate education. Magistracy. Generalists ", GOSO 03.08.328-2006 Baccalaureate. Specialty "Automation and Control", GOSO RK 3.09.330-2006. Magistracy. Specialty "Automation and Control".

The cited document places an emphasis on the preparation of graduates of the Bachelor's degree programme for service and operational activities in the field of automatic operation, automation and information systems, communication and information, diagnosis, monitoring and management of technical, information, mathematical and software as well as for experimental research, analytical and experimental work and research. As to the Master's degree programme, the main focus is on the preparation for research and teaching activities, for research and experimental work as well as for the use of correct methods and controls, monitoring, and analysis.

The university specifies the objectives for each programme as follows:

Table D.1. Objectives of **Bachelor**

Code	Objective
Objective 1	Service-exploitation activity in the sphere of automatic, automation and information systems, means of data translation and information streams, diagnostic and control systems; technical, mathematical and informational support and software.
Objective 2	Industrial-technological activity for the development and introduction of optimal technologies for engineering means in automation, informatics and exploitation equipment.

Objective 3	Organization-management activity for staff management, decision making in conditions with conflicting opinions.
Objective 4	Design-construction activity for the development, construction and modelling and implementation of projects in the sphere of automation, industrial and engineering processes, taking into account energy, technological and economically relevant aspects.
Objective 5	Experimental-research activity for analytical and experimental work and research, diagnostic and evaluation of the state of devices and engineering processes with the help of the necessary methods and means for control and analyses.

Table D.2 – Objectives of Master

Code	Objective
Objective 1	Industrial-technological activity for the development and introduction of optimal technologies for engineering means in automation, informatics and exploitation equipment.
Objective 2	Organization-management activity for staff management, decision making in conditions with conflicting opinions.
Objective 3	Design-construction activity for the development, construction and modelling and implementation of projects in the sphere of automation, industrial and engineering processes, taking into account energy, technological and economically relevant aspects.
Objective 4	Experimental-research activity for analytical and experimental work and research, diagnostic and evaluation of the state of devices and engineering processes with the help of the necessary methods and means for control and analyses.
Objective 5	Scientific-research activity - scientific-research and experimental work for engineering systems and technological processes with adequate methods and means of control and analyses; - development of mathematic and physical models of complex systems, industrial and technological processes and equipment;

	- experiment planning with the use of modern methods of mathematical analysis of results. Pedagogical activity, educational activity
Objective 6	Self-study and getting acquainted with the latest professional knowledge and skills, continuous professional improvement.

As to the expected outcomes, the university states that these comply with the relevant levels of the Dublin Descriptors (level first and second cycle respectively).

B-2-3 Learning outcomes of the modules/module objectives

The university added some missing module descriptions, e.g. for the modules in teaching practice. The university also states that they have taken into account the recommendation of peers to make module descriptions more useful for students by decreasing the lists of literature and using of more English language literature.

B-2-6 Curriculum/content

The university informs about having added missing information in the module description for the physics module. They also announce to make use of practical training in companies in order to strengthen the acquirement of skills by the students but also underlined that the curricular content itself would include application areas of the subject.

B-3-1 Structure and modularity

The university states that modularization has to be carried out in accordance with chapter 6 of the "Rules of the educational process for the credit technology of study (order of the Minister of Education and Science of the Republic of Kazakhstan from 20.04.2011. Number 152). According to these rules, the number of modules per semester is not prescribed as long as the total number of Kazakh credits per semester is maintained.

B-3-2 Workload and credit points

The university furthermore states that the transfer of Kazakh credits into ECTS is prescribed by the above mentioned rules. In accordance with this document, one Kazakh credit equals 15 academic hours. One academic hour is typically composed of 1 hour of classroom work and a different amount of independent work of the student (IWS), depending on the level of training:

- in the Bachelor's degree programme 1 hour of classroom work is complemented by three hours of IWS;

- in the Master's degree programme, 1 hour of classroom work is complemented by 5 hours of IWS respectively.

Due to these rules, the transfer of Kazakh credits into ECTS credits for bachelor and master programmes use different ratios (respectively 1.5 and 2.5-3)

Table D.3 – Transform Kazakhstan credits to ECTS (Master's degree programme)

List of modules		ECTS - credits			Form of control (exam)
No	Title of module	BSK	ISK	Total	
Basis of special knowledge (BSK)					
1	The module of history and science philosophy	4.2		4.2	Test, oral
2	The foreign language module	4.2		4.2	Test, oral
3	The pedagogics module	4.2		4.2	Test, oral
4	The psychology module	4.2		4.2	Test, oral
5	The module of professional language	4.2		4.2	Test, oral
6	The module of the organisation, planning and management	6.3		6.3	Test, oral
7	The module of programming languages	6.3		6.3	Test, oral
	Total	33.6		33.6	
Improvement of special knowledge (ISK)					
8	The module of automation		8.4	8.4	Test, oral
9	The module of system analyzes		6.3	6.3	Test, oral
10	The module of intellectual control systems		4.2	4.2	Test, oral
11	The module of mathematical modelling		6.3	6.3	Test, oral
12	The module of the theory of optimum control		6.3	6.3	Test, oral

13	The module of synthesis of control systems		6.3	6.3	Test, oral
	Total		37.8	37.8	
17	The module of practices		12.6	12.6	report
18	The module of scientific-research work (SRWM)		23.52	23.52	Execution and representation
19	The module of Final state certification		11.76	11.76	Master's dissertation (ERMD)
	Total		47.88	47.88	
	Total for all course	33.6	85.68	119.28	
	In percentage				
		28.2	71.8	100%	

The university furthermore states that the duration of 1 academic hour for a lecture is 50 minutes according to Kazakh legislation.

B-3-3 Educational methods

The university indicates that one of the educational methods used consists of the so called "contextual training" aimed at achieving knowledge by actively applying the relevant techniques. They also stress "training on the basis of experience" and a problem-oriented approach to training which allows focusing attention of students on the analysis and the solution of concrete problem situations in which it is more important to apply the correct problem-solving methods, rather than solving the problem itself.

The university furthermore explains the inclusion of electives into the curricula, stressing that the number of elective modules will be increased from 2013, despite Ministerial regulations specifying the number of credits and electives. According to the recommendation of auditors the catalogue of elective disciplines was modified in order to achieve a more understandable and convenient way of documenting the programme specifications.

B-5-1 Staff involved

The university confirms that the teaching staff responsible for the subject-specific parts of the programme is part of the sub-department "Instrument Engineering and Automation and Control". The university also reports that some activities were undertaken for better

allocating the teaching staff work load in order to decrease the work load for teaching and increasing thus the time available for research.

B-5-2 Staff development

Furthermore, the university states that they are using a grant of 90 million KZT (600 thousand dollars) from the Ministry of Science and Education of Kazakhstan Republic) for implementing scientific-research work until 2015 which also supports the increase of the scientific qualification of the staff members. The university also notes that staff members have published more than 200 scientific works in different publishing houses and journals, including foreign journals. They also declare their intention to encourage the possibility for staff to take part in trainings in non-Russian speaking countries. It is planned to improve the qualifications of sub-department staff (40% per year) also by allowing for further studies at foreign universities, in particular Lublin, Poland or Obuda University, Hungary.

B-5-3 Institutional environment, financial and physical resources

The university reports that the management of the University took into account the encouragement of the auditors to keep the software in use for the degree programmes continuously updated.

B-6 Quality Management: further development of degree programmes

The university states its plans to improve scientific and applied research in the framework of modernization and innovation development of industrial enterprises in East-Kazakhstan Region through the use of new technologies in the sphere of radio-electronics, instrument engineering and automation. To this regard, they have signed collaboration agreements with several companies (Shadrin A.K., Kvasov A.I., Baklanov A.Ye.).

B-6-1 Quality assurance and further development

The university reports that the Center of the Bologna process and academic mobility of Kazakhstan each year carries out a rating of Bachelor's degree programmes. In 2012, the Bachelor's degree programme under review achieved the 5th place (out of 13 universities) (in 2009 4th, 2010 – 2nd, 2011 – 9th rank). The rating of educational master's programmes was carried out for the first time in February - March 2013.

B-6-2 Instruments, methods & data

The university states that in accordance with the document "Internal monitoring of the quality of the educational process" this year for the first time a pilot survey was imple-

mented among graduates for the evaluation of the educational programme as a whole. The analysis of the effectiveness of the university management and of the departments is periodically implemented by several internal and external means. External evaluation includes the rating of higher education institutions and of degree programmes, by accreditation and certification of the university's quality management system. Internal estimation is implemented through public oral reports by the heads of department during the meetings of the management boards (such as the scientific council, the coordination board of the quality management system, Rector's Staff, faculty boards, learning-coordination Boards etc.), internal audits, ratings of teachers, management staff, departments, sub-departments and faculties and with the help of different questionnaires.

B1 Formal specifications / B-2-4 Job market perspectives and practical relevance / B-2-5 Admissions and entry requirements / B-3-4 Support and advice / B-4 Examinations: system, concept and organisation / B-7-1 Relevant regulations

The university took note of the positive assessment of the peers regarding these criteria.

B-7-2 Diploma Supplement and qualification certificate

Comments to C

The requested additional documents were delivered as annex or included in the statement of the university.

E Final Assessment of the peers (30.08.2013)

The peers assessed the **additional information** provided by the institution in different ways:

They considered the sample Diploma Supplements for the Bachelor's and for the Master's degree programme to be convincing. They found them to provide sufficient information about the objectives, intended outcomes, structure and level of the degree programme as well as about an individual's performance. Information about the calculation of the final mark and the ECTS grade was also provided.

As to the submission of written versions of the objectives and outcomes separated for both programmes, the peers did not find these fully convincing. While the university managed to confirm its understanding that the objectives and intended learning outcomes for both programmes need to be different, and that the Dublin Descriptors can provide an indication of how such a differentiation can be reached, the Dublin Descriptors

themselves are not usable to describe the *specific* objectives of any degree programme because they are too generic. They also noted that the objectives for the Bachelor and for the Master were nearly identical and contained rather areas of activity for the graduates than actual learning outcomes. Nevertheless, the newly defined objectives of the programmes strengthened the impression of the peers that the objectives and intended outcomes of the programmes are valid but that the putting these into writing and thus making them accessible to all stakeholders was still not convincing, specifically with regard to the mentioned overlaps between the Bachelor and the Master.

From the additional educational plans the details of workload have become clearer to the peers as they can now identify more easily the distribution between contact hours and self-study. Nevertheless, the work load in some semesters of both the Bachelor's and the Master's degree programme greatly exceed the equivalent of 30 ECTS (as stipulated by the ECTS Users' Guide. A student workload which exceeds that of a full-time working position would seem unrealistic and minimize the chances of completing the degree programmes in the standard time, unless specific supporting didactic and organizational means of teaching and learning are foreseen. However, the latter is not the case for the programmes under review.

The peers took note of the missing module descriptions (e.g. teaching practice) and found them to be improved.

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

For the award of the ASIIN seal:

As to criterion 2.2, the peers updated their assessment. Taking into account the information provided in the self-assessment report, the discussions during the onsite visit and the statement of the university, the peers considered that the expected outcomes of the programmes reflect the respective levels, were valid and compatible with the subject-specific standards. However, they found that the *written* description of the programme objectives was still not satisfying. They deemed it necessary to add a requirement to this regard. This should also relate to the fact that this updated version of programme outcomes was not yet accessible to stakeholders.

With regard to criterion 2.3, the peers found that missing module descriptions were added. They also appreciated the announcement of the university to update the literature lists. However, the peers found that several descriptions still cover a number of modules (e.g. in the case of physics or mathematics), they suggested to uphold a requirement to this regard.

The peers confirmed their assessment regarding criterion 3.2. While the additional explanations made by the university clarified the transposition of Kazakh credits into ECTS, they did not solve the underlying issue, namely that the workload of several semesters is excessive. Therefore, the peers found it necessary to uphold a requirement to this regard and ask the university to find ways of ensuring that the students' workload is within the limits. They also pointed out that correct usage of ECTS and calculation of workload is important not only for guaranteeing students' success in the programmes but also international exchange. They understood that EKSTU is highly motivated to increase students' mobility. A proper distribution of workload and thus allocation of ECTS would greatly facilitate this goal.

The peers updated their assessment regarding criterion 3.3: they considered the inclusion of elective modules as well as the choices available to the students to be transparent in the additional documentation provided. Therefore, they did not deem a requirement to this regard necessary.

With regard to criterion 7.2, the peers added that the Diploma Supplements complies with the expected standards.

Generally, the peers valued the willingness of the university to work on the recommendations provided by them. The additional information and comments from the institution entail no further changes to the assessment of the peers concerning the non-mentioned criteria.

For the award of the EUR-ACE® Label:

Taking into account the analysis above concerning the differentiation between the documentation of the programme objectives and their validity as such, the peers deemed that the intended learning outcomes of the degree programmes under review comply with the engineering specific part of Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering/Information Technology. Therefore, they recommend the award of the EUR-ACE® label.

The peers recommended the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific labels ¹	Maximum duration of accreditation
Ba Automation and Control	With requirements for one year	EUR-ACE®	30.09.2019
Ma Automation and Control	With requirements for one year	EUR-ACE®	30.09.2019

Requirements and recommendations for the different seals:

Requirements

For all degree programmes

1. It must be ensured that the workload per semester does not exceed 900 hours (equaling 30 ECTS) per semester in line with the ECTS Users' Guide.
2. A separate module description must be available for each module.
3. The learning outcomes of the programmes must be written down in a form which demonstrates that they are specific and reflect the level of the qualification sought at the same time. They must also be accessible to the relevant stakeholders in the revised form.

Recommendations

For all degree programmes

1. It is recommended to include application-oriented subjects into the curriculum (e.g. power engineering, process automation, ...) in order to strengthen the graduates' ability to work as engineers.
2. It is recommended to combine the teaching and learning of social skills with the technical modules, specifically by using modern didactic methods (e.g. project-oriented courses).
3. It is recommended to amend the list of literature in all module descriptions in order to make it more usable for students and to also include English language literature.
4. It is recommended to consider ways to better allocate the teaching load and time for research for the lecturers.

ASIIN
3.2
2.3
2.2
ASIIN
2.6
3.3
2.3
5.1

¹ Auflagen / Empfehlungen und Fristen für Fachlabel korrespondieren immer mit denen für das ASIIN-Siegel.

F Comments of the Technical Committee

F-1 Technical Committee 02 – Electrical Engineering/Information Technology (11.09.2013)

The Technical Committee agreed with the requirements and recommendations suggested by the peers.

The Committee made only small editorial changes

- Deletion of the doubling of „per semester“ in A.1,
- Deletion of the content written in brackets in E.1,
- Correction of the spelling of „project-oriented in E.2

For the award of the ASIIN seal:

The Technical Committee agreed with the findings of the peer group and their assessment for the fulfillment of the criteria for the award of the ASIIN seal.

For the award of the EUR-ACE® Label:

The Technical Committee deemed that the intended learning outcomes of the degree programmes under review do comply with the engineering specific part of Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering/Information Technology. Therefore, they do recommend the award of the EUR-ACE® label.

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

Degree Programme	ASIIN-seal	Subject-specific labels ²	Maximum duration of accreditation
Ba Automation and Control	With requirements for one year	EUR-ACE®	30.09.2019
Ma Automation and Control	With requirements for one year	EUR-ACE®	30.09.2019

² Auflagen / Empfehlungen und Fristen für Fachlabel korrespondieren immer mit denen für das ASIIN-Siegel.

Requirements and recommendations for the different seals:

Requirements

For all degree programmes

1. It must be ensured that the workload per semester does not exceed 900 hours (equaling 30 ECTS) in line with the ECTS Users' Guide.
2. A separate module description must be available for each module.
3. The learning outcomes of the programmes must be written down in a form which demonstrates that they are specific and reflect the level of the qualification sought at the same time. They must also be accessible to the relevant stakeholders in the revised form.

ASIIN
3.2
2.3
2.2

Recommendations

For all degree programmes

1. It is recommended to include application-oriented subjects into the curriculum in order to strengthen the graduates' ability to work as engineers.
2. It is recommended to combine the teaching and learning of social skills with the technical modules, specifically by using modern didactic methods (e.g. project-oriented courses).
3. It is recommended to amend the list of literature in all module descriptions in order to make it more usable for students and to also include English language literature.
4. It is recommended to consider ways to better allocate the teaching load and time for research for the lecturers.

ASIIN
2.6
3.3
2.3
5.1

G Decision of the Accreditation Commission (27.09.2013)

Decision about the award of the ASIIN seal:

The Accreditation Commission decided to award the ASIIN seal to the programmes under review.

Justification for the decision:

The Accreditation Commission fully agreed with the findings of the peer group and the Technical Committee.

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

The Accreditation Commission decided to 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.

Justification of the decision:

The Accreditation Commission found that the intended learning outcomes of the degree programmes under review comply with the engineering specific part of Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering and Information Technology.

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

Degree Programme	ASIIN-seal	Subject-specific labels³	Maximum duration of accreditation
Ba Automation and Control	With requirements for one year	EUR-ACE®	30.09.2019
Ma Automation and Control	With requirements for one year	EUR-ACE®	30.09.2019

³ Requirements / recommendations and deadlines for subject-specific labels always correspond to those of the ASIIN seal.

Requirements and recommendations for the seals:

Requirements	ASIIN
For all degree programmes	
1. It must be ensured that the workload per semester does not exceed 900 hours (equaling 30 ECTS) in line with the ECTS Users' Guide.	3.2
2. A separate module description must be available for each module.	2.3
3. The learning outcomes of the programmes must be written down in a form which demonstrates that they are specific and reflect the level of the qualification sought at the same time. They must also be accessible to the relevant stakeholders in the revised form.	2.2
Recommendations	ASIIN
For all degree programmes	
1. It is recommended to include application-oriented subjects into the curriculum in order to strengthen the graduates' ability to work as engineers.	2.6
2. It is recommended to combine the teaching and learning of social skills with the technical modules, specifically by using modern didactic methods (e.g. project-oriented courses).	3.3
3. It is recommended to amend the list of literature in all module descriptions in order to make it more usable for students and to also include English language literature.	2.3
4. It is recommended to consider ways to better allocate the teaching load and time for research for the lecturers.	5.1