



ASIIN and ANQA Accreditation Report

Bachelor's and Master's Degree Programmes
Information Security

Bachelor's and Master's Degree Programmes
Software Engineering

offered by
State Engineering University of Armenia

Last update: 30.09.2016

Basic information about the accreditation procedure

Degree programmes	<p>Bachelor's and Master's Degree Programmes</p> <p>Information Security</p> <p>Bachelor's and Master's Degree Programmes</p> <p>Software Engineering</p>
Higher Education Institution	State Engineering University of Armenia
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 • ANQA Seal • Euro-Inf Quality Label
Peer panel	<p>Shushan Arakelyan, student of Russian-Armenian (Slavonic) University (Armenia);</p> <p>Prof. Dr. Ulrich Bühler, University of Applied Sciences Fulda (Germany);</p> <p>Prof. Armen Kostanyan, Yerevan State University (Armenia);</p> <p>Prof. Dr. Thomas Ottmann, University of Freiburg (Germany);</p> <p>Ashot Vasilyan, Armenian Software Ltd. (Armenia)</p>
Procedure Manager	<p>Anna Karapetyan (ANQA)</p> <p>Marie-Isabel Zirpel (ASIIN)</p>
On-site visit	The on-site visit took place on 18 and 19 September 2013

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A Preliminary Remark

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A Preliminary Remark

The accreditation procedure for the above mentioned degree programmes was implemented as a pilot for a joint accreditation procedure in the framework of the EU funded TEMPUS project PICQA – Promotion of Internationalization and Comparability of Quality Assurance in Higher Education. The pilot character of the procedure focused on the question whether the accreditation criteria as well as the procedural standards of the Armenian Accreditation Agency ANQA and the German Accreditation Agency ASIIN were compatible. To this regard, a comparative synopsis of the programme accreditation criteria of both agencies was developed by the agencies in preparation of the process. From the beginning, it was intended to combine procedural aspects as much as possible but allow for a separate assessment against the criteria of ANQA, ASIIN and EQANIE. For this reason, perceived differences in the conclusions of the peer are due to deviations in the criteria themselves.

The on-site visit took place on 18th and 19th September 2013 at the premises of State Engineering University of Armenia in Yerevan.

Prior to the talks with the representatives of the university, the peers met to prepare their questions and to discuss the self-assessment report. Professor Ottmann was asked to act as speaker of the audit team for the aforementioned degree programmes.

The peers had discussions with the following groups of stakeholder representatives from the university:

University management, responsible managers of degree programmes, teaching staff, students, graduates and employer representatives.

Additionally, the auditors inspected the infrastructure and the technical equipment at State Engineering University of Armenia.

The following chapters relate to the Self Assessment Report (hereinafter SAR) provided in May 2013 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 04 - Informatics, 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 (EQANIE) are considered additionally.

Based on the „Euro-Inf Framework Standards and Accreditation Criteria“, EQANIE as owner of the label has authorized ASIIN to award the Euro-Inf[®] Label. The assessment for the award of the Euro-Inf[®] Label is based on the General Criteria of ASIIN as well as on the Subject-Specific Criteria (SSC) of the Technical Committee 04 - Informatics.

The assessment and the award of the ANQA seal are based on the RA Professional Education Accreditation Criteria that are based on the European Standards and Guidelines (ESG).

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 from 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 therefore is only drafted after and based on the statement of the HEI (and additional documents, if applicable).

The ASIIN Technical Committee makes a proposal for the accreditation decision (chapter F). The final decision is taken by the ASIIN Accreditation Commission for Degree Programmes (chapter G).

ANQA prepares a draft conclusion for the accreditation decision. The pilot decision is taken by the ANQA Accreditation Committee for Degree Programmes.

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	b) Profile	d) Study mode	e) Programme Duration & Credit points	f) First & annual enrollment	g) Expected intake	h) Fees
Information Security B.Sc.		Full time	8 semester 240 CP	WS 2012 WS/SS	55 per year	438000 AMD per year
Information Security M.Sc.	research orientation	Full time and Part time	4 semester 120 CP	WS 2012 WS/SS	16 per year	498000 AMD per year
Software Engineering B.Sc.		Full time	8 semester 240 CP	WS 2012 WS/SS	48 per year	438000 AMD per year
Software Engineering M.Sc.	research orientation	Full time and Part time	4 semester 120 CP	WS 2012 WS/SS	26 per year	498000 AMD per year

Analysis of the peers:

The auditors took note of the first enrolment in the degree programmes. They understood that the degree programmes were implemented several years before but were revised in 2012. They also took note of the standard period of study and the credit points. In the discussion they learned that also part-time study is provided. In this case the degree programmes remain the same but are evenly spread over a longer period of time: For the Bachelor's degree programmes the allowed time is five years and for the Master's degree programmes it is two and a half year. The auditors considered this regulation as appropriate.

The auditors took also note of the tuition fees. In the discussion with the students they learned that the tuition fees are deemed to be very high and only few scholarships are available. One fifth of the students are governmentally financed. However, the students expressed the impression that paying for the degree programmes is an investment that pays off in their professional life.

The name of the degree programmes and the profile of the master degree programmes have been discussed intensively during the audit visit. The peers assessed the English names of the two Bachelor's degree programmes as not yet fully convincing. They have

the impression that both degree programmes are basically in Computer Science with some focus either in Information Security or Software Engineering. As the intended content of the two degree programmes Information Security and Software Engineering overlaps to a large extent the auditors asked why the HEI designed the two degree programmes instead of having one combined Bachelor degree programme. They learned that the HEI offers specialized Bachelor degree programmes to attract as many students as possible, which is amongst others important because the budget of the programmes mostly stems from tuition fees. As there are only very few modules in the degree programmes that support a specialization in Information Security and Software Engineering the auditors doubt whether the names of both degree programmes are adequate to reflect the intended learning outcomes and the content of the degree programmes.

Also the auditors discussed the classification of the Master's degree programmes as having a research-oriented profile. In the discussion with the HEI they had the impression that, mainly because of lack of suitable resources, little basic research is done and few teachers are involved in research and publishing.

Further discussion is pointed out in the chapters below (Learning Outcomes, Curriculum and Staff involved).

The auditors took note of the other formal aspects of the degree programmes and took it into consideration for their assessment.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 1 Formal specifications

The peers evaluated the requirements of the criterion as not sufficiently fulfilled yet. They came to the conclusion that the names of the degree programmes have to reflect the intended learning outcomes and the curriculum of the degree programmes (cf. Learning outcomes and Curriculum). In addition the Master's degree programmes have to be based also on research activities of the teachers involved, especially if classified as research oriented. For that reason the auditors were not able to confirm the classification "research oriented", but saw the possibility not to impart any classification into an eventual accreditation certificate.

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:

The Bachelor's Degree program in Information Security is fundamental and method-oriented. The program provides an in-depth exploration of the field of information assurance which allows the following: to take an opportunity to learn how security governance structures in organizations can help users manage information technology risks; to study information ethics and the security techniques used to detect, protect, and respond to security breaches; to acquire the knowledge and skills needed to investigate and respond to security incidents. The Bachelor's Degree program in Information Security provides students with necessary skills in study and practice and gives an opportunity to enter into the labor market.

The Master's Degree program in Information Security is research-oriented. It broadens and deepens the expertise in independent scientific work, lays down the conditions for the further development of the field and prepares students for Ph.D.studies. The main objective is to complement the Bachelor's Degree by the consecutive term at a full academic degree in Computer Science, which has an appropriate professional breadth and depth. Graduates must be prepared to apply computer competency to practical issues and to manifest knowledge-based skills to develop secure information systems.

The Bachelor's Degree program in Software Engineering provides development of technological solutions to help organizations in solving pressing problems and take advantage of new opportunities. The educational program can help the students with the following: to learn to create complex, high-quality software products on time and on budget; to discover the relationship between process and product quality; to explore the quality, cost, and effectiveness of alternative software design techniques and to take the opportunity to learn to apply proven Software Engineering design principles.

The Master's Degree program in Software Engineering is focused on research and quality for Ph.D.studies. The Bachelor Degree program is a basis of for development of the Master's Degree program targeted in advanced Software Engineering. Both a deep, profes-

sional and methodical exploration of the software, as well as a rather broad and interdisciplinary approach of the software may be implemented.

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

The graduates of the Ba Information Security are able to:

- apply mathematical and information protection transactions' mathematical models, methods and means of password techniques and steganographic tools, as well as knowledge of software development technologies, aiming the design and implementation of protected computing systems, discovery and analysis, formulation and solution of related problems (skills in professional problems' resolution);
- apply efficient algebraic structures in design of symmetric cryptographic systems and steganographic applications, in order to develop appropriate software (ability to form multidisciplinary approaches);
- plan and perform cryptographic applications' software experimental testing and exploration; interpret experimental data (experimental skills);
- construct and investigate efficient computing algorithms, manage huge numbers' processing, embed the results in various coding and hashing functions' design, hardware and software resolutions, image recognition methods, in testing statistical hypothesis for steganographic purposes (skills in developing applied programs);
- construct and investigate mathematical models of information protection transactions (mathematical modelling);
- possess skills in Computer Science structural organization and operating system architecture, programming languages, secure software design technologies and tools, regulations of software product, fault detection and verification tools (skills in systems' processes analysis, computer aided design tools);
- word technical documentation on projects, reports on computing experimental works, presentations according to appropriate standards and applied information technological tools (professional writing).

The graduates of the Ba Software Engineering are able to:

- apply skills in mathematics, natural science and engineering knowledge and methods in formulation and resolution of problems in related fields (skills in professional problems resolution);

- plan and perform experimental researches, analyze and comment experimental data and make relevant conclusions (experimental skills);
- learn how to prepare technical documentation on projects, reports on computing experimental works and presentations according to appropriate standards and applied information technological tools (professional writing);
- construct and investigate models of computing systems, networks and processes, also exploit modern hardware and software tools (skills in computer aided design).

Masters in Information Security and Software Engineering are able to work on complex software development for systems or client request to the draft, implementation and installation of the solution, irrespective of whether it involves new, independent software systems or new parts that should be integrated in existing systems.

The Masters in Software Engineering possess necessary skills in object-oriented analysis and design, UML methods, styles and paradigms; they are able to develop modern software tools for software project management, and can successfully implement it individually or in a team. The learning outcomes of the speciality courses group are:

- skills in universal modelling languages' principles and development
- ability to introduce and process discrete data structures
- skills in modern programming methods and analysis of algorithms

The learning outcomes of the elective courses are:

- knowledge of modern methods of computing tools and investigation of computer networks' architectural specifics
- knowledge of modern optoelectronic and nano-technologies
- development of application of multidisciplinary approaches
- skills in comment and investigation of modern directions in mathematical and artificial intelligence
- knowledge of modern principles of enterprise management in Information technologies, operational research, optimization methods and their applications.

Masters in Information Security are able to analyze information security governance throughout the organization; to evaluate information security practices; analyze emerging threats and countermeasures and to apply security management principles. The Masters in Information Security get skills on modern approaches in secure systems' development

and are able to conduct individual research in promoting security mechanisms for software and various industrial systems. The learning outcomes of the speciality courses group are:

- skills in application of modern methods and technologies of information protection in distributed systems, analysis and design of information security systems
- skills in universal modelling languages' principles and development
- ability to introduce and process discrete data structures
- skills in modern programming methods and analysis of algorithms

The learning outcomes of the elective courses are:

- skills in comment and investigation of modern directions in mathematical and artificial intelligence
- skills in design of network applications' software, knowledge of technologies in client-server data transactions
- knowledge of modern principles of enterprise management in Information technologies, operational research, optimization methods and their applications
- skills in modern programming methods and analysis of algorithms
- knowledge of modern protection methods against malicious software, and secure systems' design technologies
- knowledge of information protection systems, attacks, cryptographic and steganographic algorithms and modern methods of crypto and stegoanalysis.

The intended learning outcomes are not yet published.

Analysis of the peers:

In the course of the conversation with the HEI the auditors learned that the HEI differentiates between degree programmes covering hardware and software development. In the degree programmes Software Engineering and Information Security the students are taught in developing software tools; programming tools in Software Engineering and technological tools in Information Security.

The HEI convincingly pointed out that the relevant stakeholders (for example companies, students, teachers, alumni and other universities) have been and will be 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. The auditors considered this involvement to be positive. They also appreciated the endeavor of the HEI to adopt the degree programmes to an international level and the need of employers in Armenia.

The peers took into account the objectives and learning outcomes of each degree programme as a whole. In general, type and level of objectives and learning outcomes of these degree programmes seems to reflect the level of European first and second cycle programmes. Overall, the audit team found that the learning outcomes have been described sufficiently and transparently yielding a sound basis for the assessment of the students' and graduates' knowledge, skills and competences. According to the audit team the learning outcomes reflect the level of the qualification sought and are achievable, valid, and reflect currently foreseeable developments in the subject area. However, the peers got the impression that the learning outcomes as described in the self-assessment report are not yet published. Therefore, they recommended that the intended learning outcomes and objectives for the programme as a whole are 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.

Accepting the objectives and learning outcomes described for the programmes under review, the central question for the peers was, if these learning outcomes would be adequately implemented via the syllabus/curricular content and the teaching methods adopted. In the peers perspective, some of the defined learning outcomes characterize the difference between Software Engineering and Information Security and between the level of the Bachelor's and Master's degree programme without insofar being backed by the curricular content of the respective programmes (cf. Curriculum).

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 2.1 Objectives of the degree programme

Criterion 2.2 Learning outcomes of the programme

The peers deemed the relevant aspects of the said criterion partly met. They punctuated that the learning outcomes and the respective curricular content need to be consistent or adjusted accordingly. In addition they stated that the intended learning outcomes of the programmes have to be accessible to the relevant stakeholders.

Assessment for the award of the Euro-Inf Label[®]:

The peers deemed that the intended learning outcomes of the degree programmes under review basically comply with the Subject-Specific Criteria of the Technical Committee 04 –

Informatics, relevant for the award of both, the ASIIN and Euro-Inf Label. The criterion “Other Professional Competences” could be made clearer in the intended learning outcomes.

For the award of the ANQA seal

Criterion 1.1 goals and objectives of the programme

Criterion 1.4 learning outcomes of the programme

The peers found these criteria as met. The defined learning outcomes reflect the programme goals and objectives that are in line with the institution’s mission and purpose, however yet to be published for the stakeholders.

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

The **objectives of individual modules** are published in the course catalogue. The module descriptions are available digitally to students.

Analysis of the peers:

In the discussion with the students the auditors learned that the course catalogue is available on a Website.

According to the peers the module descriptions show room for improvement. Apart from some missing module descriptions for several general subjects of the Master’s degree programmes the provided module descriptions do not include bibliographical references (in the English version), examination requirements and -policy and give no information on responsible module coordinators. Some learning outcomes of modules seem being formulated too generically. They were not always formulated in an outcome-oriented way asserting the specific profile of the module and the different levels of attaining the intended objectives. For example, in the discussion the auditors learned that the students are introduced in programme environments, such as Eclipse, but no information concerning this matter can be found in the module descriptions. The difference between the modules in the Bachelor’s and the Master’s degree programmes and their intended learning outcomes is not always transparent from the module descriptions. As the auditors understood from the discussion with the HEI, the modules in the Bachelor’s degree programmes contain more practical issues while the modules in the Master’s degree programmes include more theoretical issues. This distinction is nevertheless not stipulated clearly in the descriptions of course objective, content and outcomes. Some modules are identically described (for example “Mathematical Logics” and “Theory of Algorithms and Data Structure” in the Master’s degree programme Software Engineering).

The auditors accordingly deemed it necessary to review the course descriptions - including the modules from the general subjects - so that they reflect the learning outcomes at the respective level of education.

The auditors discussed also the naming of some of the modules. They learned from the discussion that for example the naming of the modules “Informatics 1, 2 and 3”, which they consider as not very meaningful, is predetermined by the university and not changeable by the department.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 2.3 Learning outcomes of the modules/module objectives

The peers considered the requirements of the above cited criterion as not being met. With respect to the deficits referred to above, they deemed it indispensable to update the course descriptions accordingly. Descriptions of the general subjects of the Master’s degree programmes have to be incorporated additionally.

For the award of the ANQA seal

Criterion 1.3 Formulation of the academic programme

The peers considered the requirements of the criterion as not being met due to incompleteness of the module descriptions. It is not clear how the assessment of the achieved learning outcomes is carried out for the award of the academic qualification.

B-2-4 Job market perspectives and practical relevance

The HEI mentions the following job perspectives for the graduates:

Research, Assistance, Development, Installation and support, Training.

Graduates of Information Security and Software Engineering shall be positioned in the areas of:

Games industry (game development), Medicine (development of innovative systems), Test (development of sensors and methods of measurement), Vision (automatic detection and object identification), Consulting Company (consulting), Simulation (development of simulation and visualization systems), Virtual Reality (VR systems development), E-learning (development of learning systems), Web Application (design and development of Internet applications), Cyber forensics, System and Network administration, Secure Software development, Security Audit, Database Systems.

Practical relevance of the programmes shall be achieved by: internship and laboratory work.

Analysis of the peers:

The peers discussed the job market perspectives with graduates of the degree programmes and representatives from industry. In the discussion they learned that the graduates of the Bachelor's and the Master's degree programme Information Security work mainly in the field of Software Engineering. Because of the very similar curricula the auditors gained also the impression that graduates have a solid chance for finding employment in the fields of Software Engineering. They realized that in the fields of Information Security the labor market seems rather small in Armenia. The auditors as well as the representatives from industry doubted whether a specialization already at the Bachelor's level rather than having a more general qualification is helpful in seeking employment under the conditions of the national labor market. Additionally the representatives from industry do not see the difference between the Bachelor's and the Master's degree programmes. According to them the effectively implemented learning outcomes would not differ with regard to the level of qualification (cf. curriculum).

The peers deemed the practical elements to be partly sufficient in order to prepare students for dealing with industry-related problems and tasks. They understood that the students have to complete two internships lasting one month each, completed with a report and awarded with 4 and 3 credits. Also the final theses are carried out externally in the majority of cases. Coursework and laboratory work are conducted in teams in all programmes under discussion. However, the peers had the impression that the competences needed for the labor market should be fostered even more. On the one hand they see an option in enlarging the internship. On the other hand they would consider including a capstone project in the curriculum to train student's soft skills, transferability capacities and to give them an idea of a software lifecycle. The auditors felt confirmed by the industry representatives: The latter considered the graduates of the programmes as not being trained enough in soft skills such as presentation skills, transferability capability and practical experience. The peers are aware of the fact that academic education would not mean immediate response to each different need of the variety of employers. Thus the university has the right and the duty to select among the requests from the employers world those relevant for the market and its future developments in general when designing study programmes. Nevertheless the auditors felt that the skills and competences mentioned as being improvable would be helpful for graduates in many different working environments, thus of general interest.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 2.4 Job market perspectives and practical relevance

The peers considered the requirements of the above cited criterion as partly met. To enhance the professional preparation of the students they recommended finding ways (e.g. enlarging the internship) for more intensively train soft skills and transferability capacity, possibly also by including a capstone project.

For the award of the ANQA seal

Criterion 1.6 Needs of the students and other stakeholders

The peers considered the requirements of the criterion as met. The graduates of the programmes mainly take up possible positions of the field in job market but still the concern is to find jobs specifically by profession.

B-2-5 Admissions and entry requirements

Admission to and competition for of the University's Bachelor's Degree Program is implemented according to the criteria and requirements approved by the Government, Ministry of Education and Science of Armenia and the Assessment and Testing Centre. Applicants are assessed according to the requirements of published criteria, regulations and procedures. The competition is conducted by the government in accordance with the approved examination list and places, for Higher Education institutes and faculties according to the specialties available. There is a high school performing at the University with physical and mathematical orientation ensuring graduation of over 100 students per year who have the possibility to get familiar with the University's bachelor programmes for choosing of one of them. The essential part of applicants of the department of Computer Systems and Informatics are graduates of this school.

Admission of applicants for a Master's Degree Program is carried out according to the "Regulations on Admission to the Master's Degree Program and Training at the State Engineering University of Armenia". Individuals that have successfully completed the Bachelor's Degree program or have obtained the equivalent higher education diploma may apply to the Master's Degree Program.

Transfer of students from Bachelor's Degree Programmes to other Bachelor's Degree Programmes within the university or between different universities is realized according to the "Order of Academic Mobility of Students in Higher Educational Institutions" of Armenia. Students' transfer from a University to University in Armenia within the same spe-

cialty is performed by the appropriate decision of a host university's rector. The student's home university provides an academic reference to be submitted to the host university.

Credits completed at another accredited/recognized institution of higher education may be transferred in the following cases:

- transferring credits must be earned for Bachelor or higher level courses;
- student should provide evidence that the credits they are requesting to transfer to the university have not been applied in whole or in part to fulfill program or degree requirement at another institution;
- credits must have no more than 4-years' prescription and be earned at least with "B-" grade;
- student must submit an official description of the course for which credit is being transferred and the copy of an official transcript of records related to grades and credits awarded for the considered course;
- students should enclose all documents with the reasons of transferring the credits, submit it to the Head of Department and get approval.

If the transferring credits are accepted by the university the student will receive a notification which indicates the titles of accepted courses and the number of allocated credits.

Analysis of the peers:

The auditors discussed with the representatives of the university to what extent the admission requirements have an impact on the quality of the degree programmes. They understood that the university has only limited influence on the national admission rules to the Bachelor's degree programmes. In the national system school graduates with the highest grades are awarded government grants and can choose their preferred university. Grades in mathematics and physics are included in the threshold score. Altogether the peers found that the admission requirements are reasonable for maintaining the quality of the Bachelor's degree programmes. The preparation of applicants at HEI's high school is a good experience in regard with the admission process that can be expanded to other high schools.

Regarding the Master's degree programmes the auditors understood that there is no threshold score for the admission but the available places are offered to the best graduates of the Bachelor' degree programmes of the university itself. Graduates deriving from other faculties have to write an essay and to give an interview in which the teachers assess whether the students possess the required competences. The auditors considered

this regulation as appropriate. However, they also learned that the graduates of Information Security are allowed to study the Master' degree programme in Software Engineering without compensating missing prerequisites and vice versa. The HEI stated that the gap between the competences of the graduates of the Bachelor's degree programme in Information Security and Software Engineering could be closed by elective courses within the Master's degree programmes. According to the peers that would mean that all the subject specific modules could be completed without having a basic knowledge in Software Engineering or Information Security. The peers replied that compensation of missing prerequisites in general should not impact the level of the programme. When designing the modules at the level of a Master's study programme the students have to possess the required competences. Therefore the auditors came to the conclusion, that the admission requirements for the Master's degree programmes should be reworked.

Altogether the peers gained the impression 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. There is no specific reference made by the regulations presented to the qualifications or competences to be recognized. Along the Lisbon Convention each university is asked to recognize activities completed externally unless the HEI can prove that the competences gained at the other HEI are completely different. 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.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 2.5 Admission and entry requirements

In the opinion of the peers this criterion is fulfilled for the Bachelor's degree programmes. Regarding the Master's degree programmes the auditors stated that the admission requirements have to ensure that the students possess the required entry competences. Compensation missing prerequisites should not impact the level of the programme.

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 internationalization and, in particular, the mobility of students (“Lisbon Convention”).

For the award of the ANQA seal

Criterion 1.4 Admission requirements

The peers found this criterion as met for Bachelor’s degree programmes, and not met for the Master’s degree programmes as programme-specific entry requirements are not defined for applicants.

B-2-6Curriculum/content

Bachelor’s degree programmes

INDEX	NAMES OF COURSES	ACAD. HOURS(per week)			ECTS
		Lect	Pract	Lab	
1	2	3	4	5	6
<i>GENERAL MATHEMATICS and NATURAL SCIENCE GROUP of SUBJECTS</i>					36
1.04.0.01	Physics 1	2	1	1	4
1.04.0.02	Physics 2	2	1	1	4
1.04.0.03	Physics 3	2	1	1	4
1.08.1.01	Mathematical analysis 1	2	2	0	4
1.08.1.02	Mathematical analysis 2	2	2	0	4
1.08.1.03	Mathematical analysis 3	2	2	0	4
1.08.1.03	Analytic geometry	1	1	0	2
1.08.1.03	Linear algebra	1	1	0	2
1.08.1.03	Probability theory	1	1	0	2
1.14.1.05	Computers Applications	1	0	2	3
1.12.2.71	Basics of Environmental Protection	2	1	0	3
<i>GENERAL FIELD'S GROUP of SUBJECTS</i>					31
1.14.5.27	Mathematical Basics of Computer Science and Informatics	2	1	1	4
1.14.3.02	Basics of microelectronics	2	0	1	3
1.14.2.01	Computer Organization 1	2	0	1	3
1.14.2.02	Computer Organization 2	1	1	1	3
1.14.2.03	Computer Organization Term Project				2
1.14.4.01	Information and Control Systems	2	1	1	4
1.14.2.04	Electronics and Circuit Design	2	0	1	3
1.14.2.05	Electronics and Circuit Design Term Paper				1
1.14.2.06	Computer Networks and Telecommunication	1	0	1	2
1.14.1.05	Programming Basics 1	2	0	0	2
1.14.1.06	Programming Basics 2	1	2	2	4
<i>GENERAL ENGINEERING GROUP of SUBJECTS</i>					23
1.05.0.01	Engineering and Computer Graphics 1	1	2	0	3
1.05.0.02	Engineering and Computer Graphics 2	0	2	0	2
1.09.2.06	Applied Mechanics 1	2	2	0	4
1.09.1.01	Applied Mechanics Term Paper				1
1.11.1.01	Electro Radio Materials	3	0	1	4
1.14.3.01	Principles of Measurement and Standardization 3	3	0	1	4
1.11.2.01	Electrical Engineering 1	2	1	2	5
<i>ECONOMIC SCIENCES' GROUP of SUBJECTS</i>					14
1.06.6.01	Economics 1	2	1	0	3

B Report of the peers (Accreditation Report)

1.13.5.01	Field's Economics and Management 1	2	2	0	4
1.13.5.02	Field's Economics and Management 2	4	0	0	2
1.02.0.02	Industrial safety	4	0	0	2
1.02.0.01	Protection of labor	2	0	1	3
<i>HUMANITIES' GROUP of SUBJECTS</i>					12
1.06.4.01	History of Armenian Nation 1	1	1	0	2
1.06.4.02	History of Armenian Nation 2	1	1	0	2
1.06.4.03	Political Science	2	0	0	2
1.06.5.01	Philosophy	1	1	0	2
1.06.5.02	Sociology	1	1	0	2
1.06.5.03	Jurisprudence	2	0	0	2
1.01.1.01	Physical Education (1-4)	4*4			0
<i>LANGUAGE GROUP of SUBJECTS</i>					18
1.06.1.01	Armenian Language and Literature 1	1	1	0	2
1.06.1.02	Armenian Language and Literature 2	1	1	0	2
1.06.2.01	Russian Language 1	0	2	0	2
1.06.2.02	Russian Language 2	0	2	0	2
1.06.3.01	Foreign Language 1	0	4	0	4
1.06.3.02	Foreign Language 2	0	4	0	4
1.06.3.03	Foreign Language 3	0	2	0	2
<i>OTHER EDUCATIONAL GROUP of SUBJECTS</i>					23
1.14.5.43	Industrial Internship				4
1.14.5.44	Pre-graduation Internship				3
1.14.5.45	State Examination on Specialty				4
1.14.5.46	Graduation Work				12
<i>TOTAL CREDITS</i>					157

Speciality subjects for the Bachelor's degree programme in Information Security

INDEX	NAMES OF COURSES	ACAD. HOURS(per week)			ECTS
		Lect	Pract	Lab	
1	2	3	4	5	6
<i>SOFTWARE COURSES' GROUP of SUBJECTS</i>					19
1.14.5.02	Computer Systems Software and Architecture 1	2	0	1	3
1.14.5.03	Computer Systems Software and Architecture 2	2	1	0	3
1.14.5.04	Computer Systems Software and Architecture Term Paper				1
1.14.5.05	System Programming	2	1	2	5
1.14.5.06	Operating Systems 1	2	0	1	3
1.14.5.07	Operating Systems 2	2	0	2	4
<i>INFORMATION SECURITY GROUP of SUBJECTS</i>					35
1.14.1.01	Informatics 1 with introduction to Information Security	1	1	2	4
1.14.1.02	Informatics 2	1	1	2	4
1.14.1.03	Informatics 3	0	0	3	3
1.14.1.04	Informatics Term Paper				1
1.14.5.08	Cryptographic and Steganographic Data Protection 1	2	1	2	5
1.14.5.09	Cryptographic and Steganographic Data Protection 2	2	1	1	4
1.14.5.10	Cryptographic and Steganographic Data Protection Term Project				2
1.14.5.11	Database System Design Technologies and Protection 1	1	0	1	2
1.14.5.12	Database System Design Technologies and Protection 2	2	0	1	3
1.14.5.13	Computer Networks Organization and Protection 1	2	0	2	4
1.14.5.14	Computer Networks Organization and Protection 2	3	0	3	3
<i>PROGRAMMING TECHNOLOGY AND INFORMATION PROTECTION GROUP of SUBJECTS</i>					29
1.14.5.15	Programming Technology 1	2	1	2	5
1.14.5.16	Programming Technology 2	2	0	2	4
1.14.5.17	Programming Technology Term Project				2
1.14.5.18	Object-oriented and Component Programming	2	0	2	4

B Report of the peers (Accreditation Report)

1.14.5.19	Data Protection Against Unauthorised Access 1	2	0	2	4
1.14.5.20	Data Protection Against Unauthorised Access 2	2	0	2	2
1.14.5.21	Network Application Software	2	0	2	4
1.14.5.22	Software Testing	2	1	1	4
TOTAL CREDITS					83

Speciality subjects for the Bachelor's degree programme in Software Engineering

INDEX	NAMES OF COURSES	ACAD. HOURS(per week)			ECTS
		Lect	Pract	Lab	
1	2	3	4	5	6
HARDWARE GROUP of SUBJECTS					21
1.14.2.07	Computer Systems Architecture 1	2	0	1	3
1.14.2.08	Computer Systems Architecture 2	2	1	0	3
1.14.2.09	Computer Systems Architecture Term Paper				1
1.14.2.10	Tools of the Digital Devices Design 1	2	0	1	3
1.14.2.11	Tools of the Digital Devices Design 2	2	0	1	3
1.14.2.12	Computer Networks Organization 1	2	1	1	4
1.14.2.13	Computer Networks Organization 2	3	0	3	3
1.14.2.14	Computer Networks Organization Term Paper				1
SOFTWARE ENGINEERING' GROUP of SUBJECTS					34
1.14.1.01	Informatics 1 (included introduction to Software Engineering)	1	1	2	4
1.14.1.02	Informatics 2	1	1	2	4
1.14.1.03	Informatics 3	0	0	3	3
1.14.1.04	Informatics Term Paper				1
1.14.5.28	Methods and Tools of the Computer's Information Protection	3	0	2	5
1.14.5.29	Database System Design Technologies 1	1	0	1	2
1.14.5.30	Database System Design Technologies 2	2	0	1	3
1.14.5.31	System Programming	2	1	2	5
1.14.5.32	Operating Systems 1	2	0	2	4
1.14.5.33	Operating Systems 2	2	0	1	3
PROGRAMMING TECHNOLOGY GROUP of SUBJECTS					28
1.14.5.34	Programming Technology 1	2	1	2	5
1.14.5.35	Programming Technology 2	2	0	2	4
1.14.5.36	Programming Technology Term Project				2
1.14.5.37	Object-oriented Programming	2	0	1	3
1.14.5.38	Programming in .NET Framework 1	2	0	1	3
1.14.5.39	Programming in .NET Framework 2	2	0	2	2
1.14.5.40	Network Application Software	2	0	2	4
1.14.5.41	Software Testing	2	1	1	4
1.14.5.42	Software Testing Term Paper				1
TOTAL CREDITS					83

Master's degree Programmes

INDEX	NAMES OF COURSES	ACAD. HOURS(per week)			ECTS
		Lect	Pract	Lab	
1	2	3	4	5	6
GENERAL COURSES GROUP of SUBJECTS					34
2.14.2.04	Design and Organization of Computer Networks	2	1	1	5
2.14.2.05	Design and Organization of Computer Networks. Term Project				2
2.14.3.01	Automated Design Systems	3	0	1	5

B Report of the peers (Accreditation Report)

2.14.3.02	Modern Element Base for Computing Tools	3	0	2	5
2.14.3.03	Modern Element Base for Computing Tools. Term Project				2
2.14.4.01	System Analysis and Operations's Mathematical Models	2	2	0	5
2.14.5.07	Information Protection and Security	2	0	2	5
2.14.5.08	Modern Operating Systems	3	0	2	5
<i>GROUP of SUBJECTS of ELECTIVE COURSES on MATHEMATICS</i>					5
2.08.2.01	Numerical methods	3	1	0	5
2.08.2.02	Discrete mathematics	3	1	0	5
2.08.2.03	Mathematical programming	3	1	0	5
2.08.2.04	Linear Algebra	3	1	0	5
2.08.2.05	Theory of probability and mathematical statistics	3	1	0	5
2.08.2.06	Approximation of multinomial functions	3	1	0	5
2.08.2.07	Basics of mathematical physics	3	1	0	5
2.08.2.08	Special functions	3	1	0	5
<i>HUMANITIES ELECTIVE GROUP of SUBJECTS</i>					12
2.06.5.01	History of Science and Methodology	2	0	0	2
2.06.5.02	Fundamentals of Modern Science	2	0	0	2
2.06.3.01	English-1	0	4	0	4
2.06.3.02	English-2	0	4	0	4
2.06.3.03	German-1	0	4	0	4
2.06.3.04	German-2	0	4	0	4
2.06.3.05	French-1	0	4	0	4
2.06.3.06	French-2	0	4	0	4
<i>RESEARCH GROUP of SUBJECTS</i>					20
2.15.3.21	Scientific seminar-1	0	2+2	0	4
2.15.2.22	Scientific seminar -2	0	2+2	0	4
2.15.2.23	Thesis for Master's Degree				12
TOTAL CREDITS					71

Speciality subjects for the Master's degree programme in Information Security

INDEX	NAMES OF COURSES	ACAD. HOURS(per week)			ECTS
		Lect	Pract	Lab	
1	2	3	4	5	6
<i>SPECIALITY COURSES GROUP of SUBJECTS</i>					17
2.14.5.09	Object-oriented Analysis and Design	2	0	2	5
2.14.5.10	Distributed Systems for Information Protection	2	0	2	5
2.14.5.11	Analysis and Design of the Information Security Systems	2	0	2	5
2.14.5.12	Analysis and Design of the Information Security Systems. Term Project				2
<i>ELECTIVE COURSES GROUP of SUBJECTS</i>					32
2.14.5.13	Mathematical Logics	2	2	0	5
2.14.5.14	Network Applications of Autonom Agents	2	2	0	5
2.14.5.15	Web Technologies	2	2	0	5
2.14.5.16	Management in the Information Technologies Field	2	1	1	5
2.14.5.17	Support for Design of Distributed Applications	2	2	0	5
2.14.5.18	Programming Styles and Methods	2	2	0	5
2.14.5.19	Basics of Software Design Management	2	2	0	5
2.14.5.20	Art of Preparation and Presentation of Scientific Materials	2	1	1	5
2.14.5.21	Antiviral Protection of the Computer Systems	2	2	0	5
2.14.5.22	Internal Treat Protection for Information	2	2	0	5
2.14.5.23	Basics of Management of Systems Input	2	2	0	5
2.14.5.24	Modern Cripto and Steganographic Analysis	2	1	1	5
2.14.5.25	Modern Cripto and Steganographic Analysis Term Project				2
TOTAL CREDITS					49

Speciality subjects for the Master's degree programme in Software Engineering

INDEX	NAMES OF COURSES	ACAD. HOURS(per week)			ECTS
		Lect	Pract	Lab	
1	2	3	4	5	6
<i>SPECIALITY COURSES GROUP of SUBJECTS</i>					17
2.14.5.09	Object-oriented Analyses and Design	2	0	2	5
2.14.5.10	Theory of Algorithms and Data Structure	2	0	2	5
2.14.5.11	Programming Styles and Methods	2	0	2	5
2.14.5.12	Programming Styles and Methods .Term Project				2
<i>ELECTIVE COURSES GROUP of SUBJECTS</i>					32
2.14.2.08	Specialized Computing Tools	2	2	0	5
2.14.2.09	Hardware and Software Tools of Computer Systems and Networks	2	2	0	5
2.14.3.06	Optoelectronic Elements for Information Processing and Transmission	3	1	0	5
2.14.3.07	Micro and Nanotechnologies	3	1	0	5
2.14.5.13	Mathematical Logics	2	2	0	5
2.14.5.14	Programming Tools of Artificial Intelligence	2	2	0	5
2.14.5.15	Web Technologies	2	2	0	5
2.14.5.16	Web Technologies Term Project				2
2.14.5.17	Management in the Information Technologies Field	2	1	1	5
TOTAL CREDITS					49

Analysis of the peers:

The peers appreciated the information given by the HEI that the department updates the curriculum every year. They welcomed the clearly visible ambition to modernize the curriculum continuously. In response to the question how the departments coordinates the individual modules without having module coordinators responsible the peers learned that all teachers meet once a month and discuss and agree upon course contents. This should ensure consistent course contents despite change of teachers.

In analysing the curriculum of the degree programmes under review, the peers took into account the fact that it is partly prescribed by national regulations and that the individual higher education institutions in Armenia have only limited possibilities to change these modules and courses. As the auditors understood the modules are partly prescribed by the ministry (for example Armenian Language and Literature, History of Armenian Nation, Physics and Mathematics) and partly prescribed by the university itself. Only few modules are in the decision of the programme coordinators and the faculty alone. Nevertheless, the peers discussed with the university how the curriculum suited the achievement of the intended learning outcomes. They would welcome a dialogue between the university and the ministry regarding the necessity of particular modules. Altogether the curriculum in place has to ensure that the intended learning outcomes can be achieved by the time the degree is completed. The peers questioned themselves, if it is in line with the European

Standards and Guidelines that a university has no full autonomy in deciding the best fitting syllabus/curriculum for achieving the intended learning outcomes.

Regarding the Bachelor's degree programmes the auditors stated that by far most of the credit points are awarded for general subjects and not for subject specific subjects. These general subjects consist partly of modules that do not fit to a degree programme in the field of informatics (for example the Humanities' and Language group of subjects, Applied Mechanics, Basics of Environmental Protection) and partly of modules that could be interesting for the degree programmes under review but are not tailored to the needs of the degree programmes. All the modules in mathematics, economics and language are offered to all the students of the university. They do not fully impart knowledge that would be necessary to achieve the intended learning outcomes (for example the auditors would recommend teaching business administration instead of economics or teaching discrete mathematics, algebra and algorithm integrity instead of all the general modules in mathematics). As a consequence there is not much space left for the subject specific modules that are essential for achieving the learning outcomes. This is why the auditors doubt whether the impart knowledge is consolidate and well founded. The auditors felt confirmed by the industry representatives which complained about graduates not having a solid knowledge and sufficient background in the fields of study.

Although having so few subject specific modules at disposal the modules in the subject specific part of Information Security and Software Engineering are partly the same (System Programming, Operating Systems 1 and 2, Informatics 1-3, Programming Technology 1 and 2 and Term Project, Network Application Software and Software Testing). That means that the curricula of Software Engineering and Information Technologies overlap to a large extent. Although subject to the strategic decision of a university the auditors were wondering why the HEI offers the two degree programmes at all instead of offering one degree programme in Computer Science. As there are only very few modules in the degree programmes that support a specialization in Information Security and Software Engineering the auditors doubted whether the naming of both degree programmes is adequate to reflect the intended learning outcomes and their content. The peers proposed either to adapt the names of the degree programmes to the learning outcomes and the content or to change the content to that effect that it is more suitable to the naming of the degree programmes.

Assessing the curriculum of the Bachelor's degree programmes the peers had the impression, that some fundamental contents of informatics were underrated. This impression got intensified during the discussions with the graduates and the employers representatives. Against the background of the rapid development in the fields of informatics the peers regarded it as very important to impart consolidate and well founded knowledge

which helps the students and graduates to adapt to present need and future developments. As an example the peers learned in the discussion that the students are taught C++ which should enable them to familiarize themselves quickly to other programme languages such as Java. In practice this is not always successful partly because of the lack of transferability capacities, which could be fostered by practical elements and partly because of the lack of consolidate knowledge. The major focus of the database systems course is on Microsoft access allowing only for a restricted view on the subject. To ensure that all graduates achieve the intended fundamental competences the peers would recommend expanding the compulsory curriculum in those fields of learning, which the auditors believe to be crucial with regard to the learning outcomes intended by the university. The curriculum could be improved by integrating topics like algorithm, theory of computation, discrete mathematics and modern programming environment and programme language.

The level of the Master's degree programmes has been discussed intensively during the audit sessions. In the discussions with the students and the employers the peers learned that the modules of the Master's degree programmes overlap to a large extend to the modules of the Bachelor's degree programmes. The contents covered in the Master's courses seem to repeat contents that were already elaborated within the Bachelor's degree programmes. The students welcomed these repetitions in support of consolidating their knowledge, whereas the peers wondered, whether there is a difference between the level of the Bachelor's degree programmes and the Master's degree programmes. In the discussion with the university the peers learned that the modules in the Bachelor degree programmes shall contain more practical issues while the modules in the Master degree programmes shall include more theoretical issues, which is not made so clear in the module descriptions. The peers wondered whether this distinction (i.e. more "theory") is enough to differ a degree programme at the Bachelor's level from a degree programme at the Master's level. In their view, the Master's curricula should include modules that are based more on actual research and prepare graduates for scientific and development work and methodology. Furthermore, the modules on the Master's level should be based on knowledge accumulated during the Bachelor's studies but lead to higher levels of knowledge, skills, and competence in the cognitive domain. The peers do not have the impression that learning outcomes specified by the university and the learning outcomes that reflect for example the ASIIN subject specific criteria relating to the Master's degree programmes in informatics can be achieved by the curricula/syllabi presented so far. The peers are not able to identify modules that help the students to make contributions to the further development of informatics as a scientific discipline and to help them being capable of solving problems which are incompletely defined. Also project

management competences such as for example enabling the students to responsibly lead teams or organizations seem not to be covered by content and teaching methods in the modules so far.

The peers found their view confirmed by reviewing the module descriptions. Most of the modules do not specify any prerequisites necessary for participating. Also they learned that the graduates of Information Security are allowed to study the Master' degree programme in Software Engineering without compensating eventually missing prerequisites and vice versa. The HEI stated that the gap between the competences of the graduates of the Bachelor's degree programme in Information Security and Software Engineering could be closed by elective courses within the Master's degree programmes. That would mean that all the subject specific modules in the respective Master's programme could be completed without having a basic knowledge in Software Engineering or Information Security. According to the peers this is not in accordance with the level of courses in Master's courses.

Similar to the Bachelor's degree programmes the two Master degree programmes in Information security and Software Engineering overlap to a large extend. Shared general courses cover 71 credits and within the four mandatory speciality courses there is one which is for both, Information Security and Software Engineering. The only difference seems to stem from three mandatory courses and the elective courses. The auditors were wondering whether this difference is sufficient to justify the distinction of the two Master's programmes expressed by their denomination and to achieve the intended subject specific learning outcomes.

Generally the auditors appreciated that the university offers language courses in the Bachelor's and the Master's degree programmes but they would recommend tailoring these courses to the needs of the subjects studied. To enhance the professional qualification of the students and their possibility to participate in international research and development activities they would need subject specific English. The auditors appreciated the information of the university, that some of the subject specific courses are planned to be taught in English and in Russian in the next year.

Although having a humanities group of subjects in the curriculum of the Bachelor's degree programmes the auditors doubt whether the students have enough possibility within the Bachelor's and the Master's degree programmes to gain insight into professional and social issues necessary for the professional preparation. Themes such as opportunities arising from the non-technical effects of the practical work as computer scientists or competences in leading interdisciplinary groups or organizations and presenting the results of the work to outsiders from the subject do not seem to be part of the mod-

ules under discussion. As already mentioned, the peers would recommend including a capstone project in the curriculum to train student's soft skills, transferability capability and to teach them all stages of the software lifecycle (especially for the degree programmes in Software Engineering). In the discussion with the HEI, the peers learned that project work is included in the module "Software Testing" and in the graduation works. However, the peers emphasized that project work would even be more effective if comprising teams in which the students can assume different roles and are able to learn about all phases of the software lifecycle in one large project. In this way the competences needed for the labor market could be fostered.

Regarding the Bachelor's and the Master's degree programmes the auditors gained the impression that for achieving the learning outcomes specified by the university the amount of general subjects is too high and also too unspecific with regard to the subject related share and the intended qualification profile. The contents and amount of the general courses should be tailored and better reflect the intended learning outcomes of each individual degree programme under review.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 2.6 Curriculum/content

The peers considered the requirements of the above cited criterion as being not fully met. Regarding the Bachelor's degree programmes they stated, that the naming of the degree programmes shall reflect the intended learning outcomes and the curriculum of the degree programmes. Also the subject related core curriculum related to the specific learning outcomes has to be expanded. By doing so, subject related learning outcomes should be supported in a more sustainable way. To ensure that all graduates achieve the intended fundamental competences it is recommended to expand the core curriculum by further fields of informatics such as theory of computation, algorithm design and analysis, discrete mathematics, including education in modern programming environments and programme languages.

Regarding the Master's degree programmes the university needs to provide evidence that the degree programmes are consistently at the level of a Master's degree programme according to level 7 of the EQF. Therefore the content of the modules needs to correlate with the intended qualification level and should not repeat content that is already elaborated within the Bachelor's degree programmes.

Regarding Bachelor's and Master's degree programmes the peers recommended increasing the number of subject specific courses taught in English. Additionally they recommended enhancing the professional preparation of students by training their soft skills and transferability capacities. Imported modules from other faculties should be better tailored to support the specific learning outcomes.

For the award of the Euro-Inf Label®:

The peers deemed that the curricular content of the Master's degree programmes is not suitable to achieve the intended learning outcomes and the subject-specific criteria of the Technical Committee 04 - Informatics. They considered the criteria in the categories „Underlying Conceptual Basis for Informatics“ (deepened knowledge of a chosen specialization), „Analysis, Design and Implementation“ (specification and completion of informatics tasks that are incompletely defined), „Technological and methodological Skills“ (ability to contribute to the further development of informatics) and „Other Professional Competences“ (leading a team, understanding of the principles of project, risk and change management, managing projects) not to be fully met by the Master's curricula/syllabi presented, although the formulation of the intended learning outcome would be almost appropriate. Thus the observed gap between intended outcomes and inputs needs to be closed.

The peers deemed that the curricular content of the Bachelor's degree programmes is partly suitable to achieve the intended learning outcomes and the Subject-Specific Criteria of the Technical Committee 04 - Informatics. They considered the criteria in the categories „Analysis, Design and Implementation“ (knowledge of all phases of the software life cycle for building new, and maintaining and commissioning existing, software systems), and „Other Professional Competences“ (awareness of project management and business practices) to be partially met.

For the award of the ANQA seal

Criterion 1.5 Design of the programme

The peers found that this criterion is met for Bachelor's degree programmes. As for the Software Engineering and Information Security Master programmes, it is not met because of large intersection with the respective Bachelor programme and insufficient research orientation.

B-3 Degree programme: structures, methods and implementation

B-3-1 Structure and modularity

The modules carry between 1 and 5 ECTS. The graduation work for Bachelor's and Master's degree comprises 12 ECTS.

Analysis of the peers:

As already mentioned above, the peers have got the notion that the Master's degree programmes incorporate also modules at undergraduate level (cf. Curriculum).

Regarding the possibility for students to spend some time abroad without loss of time the peers stated that regulations concerning the recognition of qualifications gained abroad should be adopted (cf. Admission requirements). But they took note that, in general, there are opportunities for study visits at other HEIs ("mobility window") and they are integrated into the curricula of all programmes under review in a reasonable way.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 3.1 Structure and modularity

The peers considered the criterion to be partly fulfilled. The university has to provide evidence that the Master's degree programmes do not incorporate modules at undergraduate level (cf. Curriculum).

For the award of the ANQA seal

Criterion 1.5 Design of the programme

The peers found this criterion not met due to the intersection between undergraduate and graduate levels on the one hand, and poor differentiation between Bachelor and Master programmes by the same specialty, on the other.

B-3-2 Workload and credit points

1 ECTS credit equates to 30 hours of student workload. Each semester 30 ECTS are awarded.

Analysis of the peers:

The peers saw that an evaluation of the actual workload is regularly conducted by the faculty in order to assess if the ECTS credits correspond to the actual workload. The peers got the impression that the workload is basically in line with the given ECTS credits and the students are able to finish their studies within the standard period of time.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 3.2 Workload and credit points

The peers considered the requirements of the criterion as to be fulfilled.

B-3-3 Educational methods

According to the self-assessment report, the following educational methods are in use: lectures, seminars, homework, presentation, practical studies, individual assignments, laboratory works, project and research internship.

Analysis of the peers:

The auditors gained the impression that the teaching methods used for implementing the didactical concept are appropriate to support the attainment of the learning objectives. In the Master's degree programmes 32 credits are awarded for elective subjects to allow students to develop an individual focus.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 3.3 educational methods

The peers considered the requirements of the criterion fulfilled.

For the award of the ANQA seal

Criterion 3.1 teaching and learning approaches

Criterion 3.2 teaching and learning for approaches accepted at international level

The peers found these criteria to be met with the consideration to focus on what extent the applied learning approaches and educational methods enable to acquire the competencies and assess the achievement of learning outcomes.

B-3-4 Support and advice

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

- Special hours set for students to visit the Faculty's administrative staff for support and guidance
- University's Student Council supports the processes of improving the learning processes, enhancement of learning progress and organization of students' research, disseminates information among students, publication of periodicals, presents and protects the students' rights at the University's and the Braches' governing bodies
- Each academic group has its coordinator who acts as a mediator between the students and the leadership of the Department and the Dean's Office.
- Mentor is a Department's staff member who is responsible for the study group's academic progress, performance and various organizational activities. The mentor should direct students with assistance according to SEUA regulations.
- Educational Complex's career Centre (previously student career service): assists the University's students and graduates with the job search

Analysis of the peers:

The audit team saw sufficient resources to guarantee support and counseling for students. In the discussion with the students they found out that the students are satisfied regarding the support from the university. They mentioned in this regard in particular the dean and the student council. The peers also acknowledged that the university supports the students when choosing the degree programme (Information Security or Software Engineering). Before beginning their studies the students are able to talk to the teachers and have an introduction session about the degree programmes.

However, the auditors learned from the students and teachers that the support for individual mobility could be improved. Up to now there is no information offered concerning the possibilities for periods that can be spent at another HEI, especially abroad. That does not only concern students but also teachers, who ideally should have the possibilities to go abroad for research, teaching or attending international conferences.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 3.4 Support and advice

The peers considered the requirements of the above cited criterion as being basically met with room for improvement. They recommend expanding support for mobility of both teaching staff and students.

For the award of the ANQA seal

Criterion 3.3 evaluating quality of teaching and learning approaches

The peers considered the quality of teaching and learning approaches as met with the room for improvement in terms of ensuring mechanisms for regular evaluation and updating processes.

B-4 Examinations: system, concept and organisation

The study process is organized in two academic semesters each year which are followed by two 4-week examination sessions. The mid-term testing of students' knowledge is implemented during the semester. The university indicates to publish the Course and Examination Schedules for each of the semesters in advance. The professor responsible for a subject decides the form and content of mid-term tests, final tests and final exams. At the beginning of the semester the students receive the structure, content with corresponding rating scores, form of performance and schedule of the subject's test components.

Student's rating includes the following components along information by the university:

- assessment of student's participation at the course through the accounting of attendances,
- intermediate testing of knowledge appropriation (check and assessment of implementation and appropriation of laboratory, practical works, tests, home works, essays, seminars, modules)
- check of knowledge appropriation through the final examinations.

The student has the opportunity to pass each exam subject during exam session, including the academic debts' recovery period, not more than 3 times. The deadline for academic debts' recovery period is defined at the end of the third week of current semester of corresponding educational form. After the deadline for academic debts' recovery period the student who has got mark "failed" from any subject (with the exception of physical education) is removed from the University for the demonstration of poor academic progress during the semester.

Analysis of the peers:

The peers gained the impression that type, organization and distribution of examinations are designed to support the attainment of the intended learning outcomes by the time the degree is completed. Written and oral examinations are scheduled. The peers also learned that students are informed at the beginning of the teaching term about the examination requirements. However, they are astonished because of the described state examination at the end of the Bachelor's degree programmes which covers all the modules taught in the four years of study. Such a cumulative examination at the end of a study programme is according to the peers in contradiction with the basic concept of the Bologna reform emphasising course related exams. In light of intermediate testing, final examination and state examination the peers also questioned the number of exams every student must pass, but the students seemed to be comfortable with the examination situation.

The peers took note of the fact that more than half of the students conduct their final thesis in cooperation with industry. However, it appears that one supervisor for the final thesis must always be a professor from the university making sure that a scientific work is provided. The degree topic seems to be proved by the department and sent to the dean. Additionally a joint colloquium is conducted upon information collected by the peers discussing this issue with the faculty members.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 4 Examinations: system, concept and organisation

The peers evaluated the requirements of the criterion as partly fulfilled. According to the peers the examination organization has to guarantee that the examinations accompany study and take place only on a course related basis.

For the award of the ANQA seal

Criterion 4 a Evaluation of students' level of learning outcome

Criterion 4 b Policies, procedures and standards of the assessment of the achieved learning outcomes

Criterion 6.2 Information and advice about relevant academic requirements

The peers considered the requirements of these criteria to be met with the further focus on defining student assessment methods for each module in terms of achieving module learning outcomes.

B-5 Resources

B-5-1 Staff involved

According to the HEI, the teaching staff is composed of 3 Professors, 7 Associate Professors and 16 PhD holders for all programmes under discussion.

Analysis of the peers:

Regarding the Bachelor's degree programmes the auditors considered the composition and qualification of the staff to be adequate in order to facilitate the achievement of the objectives of the degree programmes. The auditors assessed the staff resources available as sufficient in quantity and quality for the successful implementation of the programmes. They appreciated the well educated and enthusiastic staff which covers a wide range of subjects.

Against the background of the classification of the Master's degree programmes as having a research-oriented profile the auditors discussed the research activities of the teaching staff. They understood in the discussion with the university that traditionally there was an institutional separation between universities and research institutions and a structural separation within the universities between professors acting in research and those acting in teaching. Thus the auditors understand that combining research and teaching is a new development for the education system in Armenia. However, taking into consideration the European Qualification Framework, a Master's degree programme should be based on recent research and development and should impart knowledge in the subject specific field of research. This is even more so as the university classifies their Master's degree programmes as having a research-oriented profile. One way to ensure research-based teaching at Master's level would be the possibility for teachers to act as researchers and developers in their subject fields themselves. But the peers would be open for arguments by the university for other ways of research based teaching as well.

In the discussion with the university the auditors got the impression that, mainly because of lack of resources, little basic research is executed and only few teachers are involved in research and publishing. This seems partly due to the high teaching load of the professors which gives very little time for research. Also the teaching staff has not stipulated opportunity to research sabbaticals. The peers understood that attending relevant conferences in the fields of research is hardly financially supported by the university or the national budget, so that in particular young researchers have problems to attend internationally relevant conferences. In the fields of information security some of the teachers involved received their PhD in steganography and show still research activities referring to this

field. Differently is the case of Software Engineering, in which none of the teacher seems to have an individual research focus. Research activities conducted in the degree programmes are offered and ordered by the industry and this is more development oriented. Except for one joint research activity with the University of Zurich no research grant seems to exist that would finance basic research activities. Altogether the peers doubted whether the research activities and possibilities of the teaching staff are such as to ensure that the educational level sought for the Master's is attained. The auditors see lack of research and development (especially in the field of Software Engineering) on the one hand and on the other hand they do not see an integration of research related questioning, methodology and problem solving into the modules of the degree programmes under question.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 5.1 Staff involved

The peers regarded the requirements of the criterion as partly fulfilled. Regarding the Bachelor's degree programmes they would recommend intensifying the scientific and research possibilities and activities of the faculty members with view to international competitiveness. Regarding the Master's degree programmes the auditors reached the conclusion that subject specific research and development activities by a significant number of teachers would be of major importance for ensuring education at level 7 of the EQF unless the university ensures other solutions for research and development.

For the award of the ANQA seal

Criterion 2.1 teaching staff qualifications

Criterion 5 d research and teaching

The peers found the teaching staff qualification criterion to be met.

The majority of the peers found that the research and teaching criterion is overall met for Information Security Master programme, while the minority of the peers not confirmed this. All of them found that it is not met for Software Engineering Master programme. The involvement of the teaching staff in recent research activities is still limited.

B-5-2 Staff development

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

The Head of Department has the duty to plan, control and take a direct participation in the qualification improvement process of the Departments' academic staff, researchers and engineer-technical staff and to give a methodical support to beginner professors in order to increase their teaching skills. Training procedures for the academic staff are generally carried out with the assistance of the Teachers' Training Centre and are planned in advance. 15 persons of the academic staff attended professional advanced courses within the last 4 years.

Analysis of the peers:

The auditors noted that all of the teaching staff members have sufficient possibilities to develop and train their didactic and professional skills. The university has developed a plan, however the resources for promoting the teaching staff professional development with regard to research and development, further professional education are still limited.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 5.2 Staff development

The peers considered the requirements of the said criterion as met by the universities human resources policy (regarding research and development see criterion 5.1)

For the award of the ANQA seal

Criterion 2.2 and 2.3 promotion of the teaching staff

The peers found the criterion as met with the consideration to enlarge the possibilities and resources for teaching staff involvement in further modern research activities.

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

The Faculty of Computer Systems and Informatics consists of a general education and four issuer Departments, which are responsible for specialties. The department Information Security and Software Development was founded in 1991.

The Faculty has 26 classrooms and computer labs and 8 technologically enriched classrooms with 350 computers.

Allocation of the University's financial resources is done at the beginning of each year making its annual short-run budget. Inflows are divided into two parts: the state budget inflows and other inflows. The state budget inflows are divided, in their turn, into the fol-

lowing main points: compensation of tuition; stipends; funding of research; funding of secondary education.

According to the self-assessment report, the Faculty has close scientific and educational ties with the Universities of United States, Sweden, Greece, France, Austria, Germany, Switzerland, England and the Russian Federation.

Analysis of the peers:

In the discussion with the university the auditors discussed intensively the financial basis of the programmes. They understood that the university obtains funds from the ministries in an amount up to 20 percent. Another part of the budget needed is financed by student fees, industry, technical economical cooperation programmes, international programmes like TEMPUS and courses they offer in the range of lifelong learning. As the auditors have no data besides this information regarding the financing of the programmes they need additional information concerning this matter. The university should provide evidence, how the financing of the programmes is assured, at least for the accreditation period.

In the course of the conversation with the students the peers learned that the library and the rooms are considered to be sufficient and the required software seems available although some additional software licences for the students work would be helpful. During the on-site visit, the auditors also assessed the technical equipment and the laboratories. They positively acknowledged the good equipment for product specific education.

To assess the support of the students the auditors would need as additional information also information about the use of infrastructure to manage the learning support.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 5.3 Institutional environment, financial and physical resources

The peers came to the conclusion that, overall, the resources are satisfactory to facilitate the achievement of the stated objectives for each of the degree programmes to be accredited. Nevertheless, they need for their final conclusion additional information about the sustainable financial basis of the programmes for the lifecycle of an accreditation.

For the award of the ANQA seal

Criterion 1.2 institutional planning and resource allocation

Criterion 2.4 coverage of qualifications by permanent staff

Criterion 6.1 property and resources

Criterion 6.3 teaching and learning resources

The peers considered these criteria as met with the room for certain improvement of the environment for student research experience.

B-6 Quality Management: further development of degree programmes

B-6-1 Quality assurance and further development

The university describes its approach as follows:

The strategy and policy on quality assurance are stated in the 2011-2015 Strategic Plan and are confirmed by the University's Management Council. The Strategic Plan is published and placed at the university's website. The current Strategic Plan includes the following strategic trends on QA:

- development of the quality assessment and assurance system concept and the organizational scheme with distinctly separated structural units, the management structure responsibilities and their functions;
- creating mechanism and appropriate indicators on further monitoring, self-analysis of the educational outcomes and human resources' provision of the academic programs;
- planning and implementation activities directed to analyze the University's academic programs and performance of academic Departments which are responsible for a proper implementation of activities on internal quality assurance processes;
- preparing and initiating external assessment and accreditation of the SEUA educational programs;
- providing the quality assessment criteria and transparency of the entire process;
- Striving to provide the unified criteria of the learning and teaching quality for the University and its Branches.

Students are involved in QA as internal stakeholders. They are

- involved in the education quality assurance through student surveys and alumni satisfaction surveys;

- involved in the Faculty councils, the SEUA Academic Council and in its quality assurance committees;
- they take part in the process of University QA as representatives of the Student Council and the Student Scientific Association;
- they take part in self-analysis/self-evaluation of the University's Faculties according to the formal procedures.

Analysis of the peers:

With regard to the development and continuous improvement of the aforementioned degree programmes, the auditors considered the quality management concept. The data gathered by surveying alumni and employers are used to provide information about student employment upon completing their degrees and allow drawing conclusions as to whether a programme can be successfully completed. Also the peers got the impression that an evaluation of the actual workload has been conducted regularly in order to assess if the ECTS credits correspond to the actual workload.

However, in the discussion with the students the audit team got the impression that feedback loops are not always effectively closed in practice. The students reported on modules in chemistry which were deleted from the curriculum because of the complaint of the students. But the results of the student's surveys are not used regularly for discussion between students and teachers.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 6.1 Quality assurance and further development

The peers evaluated the requirements of the criterion as partly fulfilled. They strongly recommend further developing the concept of quality assurance for the degree programmes and using the result for continuous improvement of the programmes. Feedback loops in the student evaluation should be organized in a more effective manner.

For the award of the ANQA seal

Criterion 2.2 policies and procedures for periodic evaluation

Criterion 3.3 mechanisms evaluating quality of teaching and learning approaches

Criterion 7.1 quality assurance design

Criterion 7.2 programme internal quality assurance

Criterion 7.4 involvement of internal and external stakeholders

Criterion 7.5 dissemination of good practice

The peers evaluated the requirements of the criteria as not met and pointing the necessity to develop quality assurance policy and procedures on programme level and use the results of feedback mechanisms for further improvement. Although evaluation of the programmes is carried out in the university, it is still to be made more systemized. As the onsite visit showed, the university has the information about the graduates of the programmes in regard with their employability. Taking into account that quality assurance system is in the process of development, the university could consider this as an issue for further development through consistent career tracking as one of the useful tools.

B-6-2 Instruments, methods & data

The university describes its approach as follows:

One of the main components for evaluation of the University's activities, as well as for revealing the student's education needs is organization of surveys among students related to quality of education and satisfaction from the obtained education. The questionnaires are periodically reviewed according to the changes of the University's goals and objectives. Within the frames of regular review of the quality of teaching and learning processes, as well as during the annual monitoring, surveys are conducted among alumni and employers.

Analysis of the peers:

The peers found that the university collects data about several aspects of the degree programmes, including students' progress, grades, learning outcomes and student employment upon completing their degree. These data were considered relevant for the university with regard to the further development of the programmes.

As already mentioned, the auditors stated that the feedback loop regarding the results of the students' evaluation should be organized in an effective and consistent manner. For the effective utilization of student surveys results the peers found it reasonable to organize them in a more comprehensive way.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 6.2 Instruments, methods & data

In principle, the peers considered the requirements of the said criterion as met.

For the award of the ANQA seal

Criterion 1.7 mechanisms and procedures for development, approval, monitoring and periodic review of the academic programme

Criterion 4 c mechanisms for review and improvement of student assessment

Criterion 7.3 educational feedback system

The peers found these criteria to be met. The university should focus on the organization of students' surveys on a regular basis for closing the feedback loop.

B-7 Documentation and transparency

B-7-1 Relevant regulations

The following regulations are in force:

- The SEUA Applicant's Guide which includes information on admission conditions and rules, the offered specialties according to the forms of training, the admission amount, competitive transitory indicators, as well as the number of faculties;
- The SEUA 2012-2013 academic year admission booklet having a complete information about the Faculties and specialties anticipated by the admissions plan of a given year;
- An information package for first-year students including the student's guide, guide on student's rights and responsibilities and other thematic booklets;
- the guides for training by the credit system and the reference books of the courses for Bachelor's and Master's Degree programs. These guides and reference books contain all information regarding students' trainings, particularly on the credit system principles, organization of educational processes, order of knowledge assessment, the structures, contents and workloads of academic programs, the constituent courses of the programs, as well as the contents and work time (credits).

Analysis of the peers:

The regulations for study-relevant issues are in place and made available. These regulations include all the information necessary about the admission, course and completion of the degree.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 7.1 Relevant regulations

The peers concluded that the requirements of the criterion are met in general. Critical points referred to in other chapters of this report, which may affect them, notwithstanding.

B-7-2 Diploma Supplement and qualification certificate

A sample of the Diploma Supplement in English language for a Bachelor of Engineering in Informatics is annexed to the self-assessment report.

Analysis of the peers:

As the provided Diploma Supplement is issued for a Bachelor of Engineering the auditors need to see the four Diploma Supplements for the four degree programmes. The Diploma Supplement has to provide information about the study aims and (generic) learning objectives, nature, level, context, content and status of the studies specifically for each programme, the success of the graduate as well as about the composition of the final grade. In addition to the national grade, an ECTS grading table according to the ECTS Users' Guide needs to be foreseen.

Conclusion of the peers:

For the award of the ASIIN seal

Criterion 7.2 Diploma Supplement and qualification certificate

In order to be able to assess the compliance with this criterion, the peers asked for the English version of the diploma supplements for all degree programmes under discussion.

B-7-3 Academic integrity¹

The academic integrity during admission process is regulated by standards of the RA Ministry of Educations and Science for the Bachelor Degree, and by regulations of the HEI Scientific Council for the Master degree.

¹ Criteria B 7-3 and B 7-4 were assessed only by the Armenian members of the peer panel.

The lecturers of the department are responsible for maintaining the academic integrity of students during performing of course works, course projects and examinations. The topics of capstone projects are preliminary discussed with the Head of chair, who gives recommendations taking into account the existing achievements in a corresponding area. The process of capstone preparation is controlled by supervisor who, particularly, is responsible for keeping students informed about regulations and legal issues, such as plagiarism and copyright.

Analysis of the peers:

The peers positively assessed the efforts towards ensuring academic integrity. At the same time, they took note that there is a necessity to apply a more systematic approach for providing high-level academic integrity.

Conclusion of the peers:

For the award of the ANQA seal

Criterion 4 d Treatment by the institution

Criterion 4 e academic integrity and plagiarism

The peers considered the requirements of the above criteria as met.

The peers found it necessary to include a scientific writing related course in curriculums of Master's degree programs aiming the study of rules and standards for scientific publications.

In order to avoid the possible repetitions in capstone projects topics, the peers would recommend making available the annotations of capstone projects defended during last 5 years for each specialty. More protection against the plagiarism could be provided using a plagiarism detection software.

B-7-4 Research and development²

The members of Chair of Information Security and Software Engineering are specialized in areas of Information and Coding Theory, Steganography, Image Processing, Software Development, Computer Graphics, Software Ergonomics and Information Management. They have 44 publications in proceedings of local and international conferences for 2011-2012 years. The four conferences among them were held abroad. The ongoing research in technology and engineering is supported by the RA State Committee of Science. Academic

² Criteria B 7-3 and B 7-4 were assessed only by the Armenian members of the peer panel.

teaching (another research program) is supporting by the National Science Foundation of Switzerland.

The chair members currently supervise 23 postgraduate works. For the period from 2011 to 2012 four students defended their Ph.D. theses. Three chair members were seconded abroad to participate in conferences and exhibitions. Two students participated in conferences organized by Caspersky's Laboratory and reached an international round.

Analysis of the peers:

The peers found that the number of conferences abroad the chair members have participated is just a small fraction of the total number of conferences they participated. They pointed that this limits the ability to make available the investigations results for international scientific community. In addition, the number of persons participated in scientific trips is a few part of the chair staff.

Conclusion of the peers:

For the award of the ANQA seal

Criterion 5 a Strategy and programmes regarding research interests

Criterion 5 b Promoting of development and innovation

Criterion 5 c internationalization of the research

The peers found these criteria as basically met with the room for improvement in regard with involving more staff in scientific trips, especially young researchers, as well as to better use laboratories and available technical means for involving graduates in research activities.

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. Diploma Supplements for the four degree programmes
2. Evidence that the financing of the programmes is assured for the accreditation period
3. Use of infrastructure to manage the learning support of the students
4. Evidence that academic integrity is assured on the level of the department and description of the measures against plagiarism and manipulation of examination results

D Comment of the HEI (15.01.2014)

The institution provided the following statement:

The SEUA officials mostly agrees with the peers' comments and recommendations and is willing to take them into consideration when revising degree programs under accreditation meanwhile ensuring further significant improvement in the learning process. University officials also find it expedient to provide the following comments on individual parts of the Accreditation Report.

D-1 Formal Specifications

In response to the peers' evaluation that the criterion is not sufficiently fulfilled and the English names of the two Bachelor's degree programmes do not reflect the intended learning outcomes and the curriculum and, therefore, may be offered in a combined Bachelor's degree programme, the university would like to point out that both Information Security and Software Engineering specialties are priority directions in development of the RA Information technology and have an extreme significance for Armenia. Labor demand in these areas requires high specialization in the fields. At the same time, the names of the specialties accepted in the CIS region are still in the consolidation phase. This is the reason that the university offers the degree programmes separately. The two degree programmes are different indeed and truly diversified in technological part of respective learning outcomes and the curriculums of both specialties have been already updated in the parts of intended learning outcomes and syllabuses.

The SEUA also notes that the Master's degree programmes truly reflect the research activities of the teachers involved. The latter is evidenced by the Master's theses developed in line with modern technological advances and their contents, which are controlled by the department through strict highly professional peer reviewing.

D-2 Degree Programme: content concept & implementation

D-2-1 Objectives of the degree programme

D-2-2 Learning outcomes of the programme

On fulfillment of this criterion, the university states that the curriculums of the degree programmes under accreditation have been developed according to the intended learning out-comes, and as a whole (included learning outcomes in syllabuses) will be accessi-

ble to the relevant stakeholders on the SEUA Internal Quality Assurance bilingual (Armenian and English) automated system by March, 2014.

In response to the peers' statement that the difference between the levels of the Bachelor's and Master's degree programmes in Software Engineering and Information Security are not made clearer, and the curriculums of the degree programmes overlap to an extent, the university states that the diversification of the degree programmes is evidenced by different knowledge base, bibliography and references for respective programmes (cf. Syllabus/curricular content) adjusted accordingly. However, the university ensures that overlappings, in any forms they are encountered in the self-assessment report, will be identified and removed. We also find that overlapping may encounter in submitted abstracts in English, meanwhile the Syllabus/curricular content of respective degree programmes designed in Armenian language are distinct. Thus, we ensure that the degree programmes are not identical, and Syllabus/curricular content of respective degree programmes are properly differentiated. This is made clear, particularly, in the learning outcomes of the degree programmes given in the self-assessment report, as well as in Syllabus/curricular content (the latter was disposed to the Armenian side peers and was evaluated as fulfilled), where the two specialties are described distinctly with included relevant bibliography.

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

In response to the peers' assessment that the criterion is not met due to incompleteness of the modules' descriptions, the university informs that formulation of the modules is currently in progress, and SEUA already initiated the transition to the degree programmes' modularity with provision of transparency of the intended learning outcomes in respective module descriptions. As was pointed out (cf. D-1), the degree programmes are developed to meet intended learning outcomes, and this circumstance provides an opportunity to modularize the programmes. The university has an experience to implement modularity within the frame of consecutive education, and this mechanism will be successfully applied in the procedure of the degree programmes' modular implementation.

D-2-4 Job market perspectives and practical relevance

The SEUA agrees with the peers' recommendations to foster the students' competencies for the labor market needs, also to consider the possible inclusion of capstone projects in the curriculums to train the student's soft skills and transferability capacities. With this regard, although the mentioned components are not included in the Syllabus/curricular content, the university notifies that the students are given soft skills within the framework of specific subjects, as well as in the scope of individual and overtime activities. The overall professional preparation of the students is ensured also through the statistics of

their successful participation in international conferences and various student competitions.

D-2-5 Admissions and entry requirements

The university consents with the peers' evaluation of the criterion fulfillment and acknowledges that admission to the Master's degree has not been clarified yet in terms of ensuring the required Bachelor's degree programmes' learning outcomes possession, and admission requirements for the Master's degree programmes should be reworked.

Currently, taking into account the remarks of the peers on the Master's degree admission and entry requirements, the university conducts the review and elaboration of the "Regulations on Admission to the Master's Degree Programme in the State Engineering University of Armenia", which will be implemented starting from the next academic year admission process. In addition, we note that the university has an intend to introduce bridge (preparatory) learning, which is another opportunity for the graduate of other specialties Bachelor's degree programmes to overcome academic differences in a predefined time period and to ensure the equal conditions of the Master's degree programmes admission.

D-2-6 Curriculum/content

In response to the peers' assessment that the Master's degree programmes do not fully meet the criterion due to insufficient research orientation and overlapping to the modules of respective Bachelor's degree programmes, the university finds that the degree programmes under accreditation are not identical in core, and the programmes' contents are truly differentiated (see D-2-2).

Meanwhile, the university consents with the peers' recommendation to extend the volume of specialized learning components in the curriculums content. In this regard, the university initiated an elaboration and improvement of the curriculums by introducing professional education supporting subject specific courses, such as Higher Algebra, Theory of Computation, Analysis and Design of Algorithms, Discrete Mathematics and others. The elaboration will be implemented in an extent to ensure that all graduates achieve the intended fundamental competencies, soft skills and transferability capacities in terms of internationalization and the mobility.

Acknowledging another recommendation of the peers, the university is planning to conduct some subject specific courses in English and Russian without breaking the RA Law on Language. A series of activities in this direction are already initiated, particularly aimed to preparation and application of appropriate educational materials.

D-3 Degree programme: structures, methods and implementation

D-3-1 Structure and modularity

In reference to the peers' evaluation that the criterion is partly fulfilled, the university states that the degree programmes are not identical, and the respective Bachelor's and Master's degree programmes are differentiated in core (cf. D-2-2). Concerned with the peers' remark on the degree programmes' incomplete modular structure, we note that, as was mentioned above, the modularization is currently in progress (see D-2-3).

D-3-2 Workload and credit points

D-3-3 Educational methods

D-4 Examinations: system, concept and organisation

In consideration of the peers' evaluation that the criterion is partly met and, in particular, the criticism on the described state examination at the end of the Bachelor's degree programmes, the university acknowledges the remark and, accordingly, is considering the possibility to eliminate the state examination and to transfer the overall inspection of consolidate learning out-comes to the stage of the graduation works' defence, meanwhile obtaining the clarification of the graduate projects' requirements.

D-5 Resources

D-5-1 Staff involved

Regarding to the peers' recommendation on enhancing the scientific and research possibilities and activities of the academic staff with the view to international competitiveness, the university informs that the latter is under a permanent focus of the SEUA and the department officials, and is in ongoing reform process and, thus, stands for a guarantee for consecutive improvement of the degree programmes under accreditation. Acknowledging the peers' assessment in this regard, the SEUA advises that an attempt is already made to carry out the promotion of the academic staff through involvement of highly qualified specialists in the field on a part time basis.

D-5-2 Staff development

D-5-3 Institutional environment, financial and physical re-sources

D-6 Quality Management: further development of degree programmes

D-6-1 Quality assurance and further development

In response to the peers' assessment that the criterion is partly fulfilled, we inform that the university created an Internal Quality Assurance System, which, by the way, was rated positively by Institutional accreditation experts. As was mentioned above (see B-2-2), an

online bilingual (Armenian and English) information/analytical automated system, serving the issues of the SEUA Internal Quality Assurance, will be put into operation by the end of February, 2014. Designed modern electronic tools will give an opportunity to conduct the degree programmes' quality assurance policy in order to evaluate their appropriateness to European qualification assurance standards and criteria. In fact, the pilot stage of the aforementioned system has been already accomplished for the degree programmes under accreditation.

Through a special electronic questionnaires, permanent information is gathered from all the stakeholders of degree programmes, and, as the peers fairly noticed, these feedback mechanisms also contribute to the degree programmes' quality assurance.

D-6-2 Instruments, methods & data

D-7 Documentation and transparency

D-7-1 Relevant regulations

D-7-2 Diploma Supplement and qualification certificate

Regarding this criterion the university informs that the Diploma supplement, standing for a qualification certificate, has been elaborated and implemented in SEUA since 2008. We note that the peers were provided Diploma supplement for only one degree programme as an example. Attached are the Diploma supplements of all degree programmes under accreditation.

D-7-3 Academic integrity

D-7-4 Research and development

Additional Information

In response to the issues and recommendations presented in this section the SEUA administration provides the following:

1. The Diploma supplements for the four degree programmes are attached (cf. D-7-2)
2. The presented degree programmes are mostly demanded in Armenia, and it is expected that at least in the foreseeable future they will maintain and strengthen the positions. This stands for a guarantee that the degree programmes under accreditation will have the predefined maximum amount of students and respective financing during the whole period of accreditation. Moreover, the fact of accreditation will guarantee a

clear increase in financing not only during, but also after the accreditation period. Mechanisms ensuring the statement are already made visible.

3. As was reflected in the self-assessment report, the degree programmes under accreditation are provided with necessary laboratories and auditoriums, which are permanently retooled according to modern requirements. The mentioned infrastructure in non-academic time is provided to students for conducting overtime and complementary research activities. All kinds of educational and mandatory internships are organized on the basis of relevant professional organizations with the assistance of the Labor Market Analysis and Professional Carrier Support Center of the university.

4. An automated system for inspecting the published materials' originality is in progress of elaboration. The application developed will be allocated on the SEUA Website by September, 2014, and will be publicly available to the relevant authorities. Also, it will give an opportunity to develop a permanently expanding database for collecting and storing graduation works, course projects and essays for respective degree programmes. Hereby, this will make it possible to control the originality of newly submitted works by comparing their full content with materials available both in the database and on the Internet. Meanwhile, the classified list of works and relevant abstracts in the database will be made available publicly, whereas the relevant full contents will be hidden. This aims to the copyright protection and confidentiality of scientific research unpublished components, and will provide blocking of unauthorized access.

E Final Assessment of the peers (26.02.2014)

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

The peers thank the university for submitting the Diploma Supplements. They are astonished that as per Diploma Supplement a Bachelor of “Engineering” is awarded instead of a Bachelor of “Science”. This also applies for the Master’s degree programme in Software Engineering. Furthermore the peers could not find any information or statistical data in addition to the final mark to assist in interpreting the individual grade. They consider it necessary to provide such data in accordance with the ECTS User Guide. Hence the Diploma Supplements should be reworked in this regard (ASIIN criterion 7.2).

The peers note the statement that the degree programmes will have the predefined maximum amount of students and respective financing during the period of accreditation. However, with this information the peers are still not able to assess the financing of the programme. They would need facts and figures that provide information about the financial means that are available for the degree programmes. Of course the peers would keep this information in confidence. Eventually the university has to provide evidence, how the financing of the programmes is assured, at least for the accreditation period (ASIIN criterion 5.3).

The peers understand that Information Security and Software Engineering are specialties that are important for Armenia and in great demand from the labor market. Still they point out that the names of both degree programmes have to correspond with the learning outcomes and the curriculum. The curriculum and the module descriptions that were given to the peers with the self assessment report do not seem to reflect the names of the degree programmes. Only very few modules seem to support a specialization in Information Security and Software Engineering. Therefore, the peers confirm their assessment that the names of the study programmes have to reflect the curriculum and intended learning outcomes (ASIIN criterion 1, 2.1, 2.2, 2.6).

The peers welcome the information given by the HEI that the intended learning outcomes of the programmes will be made accessible to the relevant stakeholders by March, 2014 on a new internal quality assurance system. This tool shall also serve the quality assurance and further development of the degree programmes which the peers consider to be positive. They hope that the university will also use this tool to close effectively feedback loops in practice. Until the internal quality assurance system is implemented the peers confirm their assessment concerning the publication of the learning outcomes and the quality assurance system (ASIIN criteria 2.1, 2.2, 6.1, 6.2).

The peers welcome also the information that the HEI is in the process of formulation the modules. They confirm their assessment that the module descriptions have to be updated and complemented by the missing ones (ASIIN criterion 2.3).

The peers understand that the university teaches soft skills within the framework of specific subjects. Nevertheless they would recommend finding ways for more explicitly train soft skills and transferability capacity (ASIIN criterion 2.4).

Regarding the Master's degree programmes the peers welcome the information that the admission requirements will be reworked. This revision is a condition for assuring that the study programmes are constantly at the level of a Master's degree programme. Until they are reworked the peers confirm their assessment concerning this matter (ASIIN criterion 2.5).

The peers appreciate the information of the university that they think about expanding the subject related curriculum and conducting subject specific courses in English and Russian. They also notice the statement that the curricular content of the Bachelor's and the Master's degree programmes and the degree programmes in Information Security and in Software Engineering are properly differentiated. However, the university does not provide any new evidences or arguments that would rebut the impression the peers gained based on the submitted self-assessment report, Syllabus, module descriptions and the discussions during the on-site visit. Therefore the peers confirm their assessment concerning this matter (ASIIN criteria 1, 2.3, 2.6).

The peers welcome the information that the enhancement of scientific and research possibilities of the academic staff is under a permanent focus of the university. With regard to the Bachelor's degree programmes the peers recommended to further intensify the scientific and research basis of the faculty. With regard to the Master's degree programmes subject specific research and development activities would be of major importance for ensuring education at level 7 of the EQF (ASIIN criterion 5.1).

The additional information and comments from the institution entail no further changes to the assessment of the peers.

For the award of the Euro-Inf[®] Label:

The peers deemed that the intended learning outcomes of the Bachelor's degree programmes under review comply with the Subject-Specific Criteria of the Technical Committee 04 - Informatics. Therefore, they recommend the award of the Euro-Inf[®] label.

The peers deemed that the intended learning outcomes of the Master's degree programmes under review do not comply with the Subject-Specific Criteria of the Technical Committee 04 - Informatics. Therefore, they do not recommend the award of the Euro-Inf[®] label.

For the award of ANQA seal: Bachelor's degree programmes

The peers deemed that after refining the curricula and subject coverage of the Bachelor's degree programmes under review, they comply with the State Academic Standards and Armenian National Qualifications Framework. Therefore, they recommend the award of ANQA seal.

For the award of ANQA seal: Master's degree programmes

The peers deemed that the Information Security Master's degree programme is cohesive enough, sufficiently supported by research and aimed at the learning outcomes. It ensures the smooth transfer from graduate to post-graduate study, and the evidence is the large number of post-graduate students in the field of Information Security. There exist the mechanisms to involve them into the education process. The dynamic in the development of the programme is evident. Proceeding from this, the peers recommend the Information Security programme for the award of ANQA seal with condition.

The peers do not recommend the Software Engineering programme based on the issues of insufficient research orientation and unclear focus on programme objectives. Revision of the programme is necessary.

The peers recommend the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific labels	Maximum duration of accreditation
Ba Information Security	With requirements	Euro-Inf [®]	30.09.2019
Ba Software Engineering	With requirements	Euro-Inf [®]	30.09.2019
Ma Information Security	Suspension	Euro-Inf [®] Suspension	
Ma Software Engineering	Suspension	Euro-Inf [®] Suspension	

Degree Programme	ANQA-seal	Maximum duration of accreditation
Ba Information Security	With requirements	
Ba Software Engineering	With requirements	
Ma Information Security	With requirements	
Ma Software Engineering	Suspension	

Requirements and recommendations for the different seals

ASIIN-seal and Euro-Inf[®]-Label

Ba Information Security and Ba Software Engineering

Requirements

- | | ASIIN | ANQA |
|---|------------------|-------------------|
| 1. The name of the study program has to reflect the curriculum and intended learning outcomes. | 1, 2.1, 2.2, 2.6 | 1, 1.1, 1.4, 1.5, |
| 2. The core, subject related, curriculum has to be expanded. By doing so, subject related learning outcomes should be achieved more sustainably. | 2.6 | 1.5 |
| 3. The information on objectives and intended learning outcomes of the programmes as a whole has to be accessible for the relevant stakeholders. | 2.1, 2.2 | 1, 1.1 |
| 4. The module descriptions have to be updated, paying specific attention to those details as explained in the attached accreditation report (formulation of learning outcomes and module content, examination requirements and policy, bibliographical references, etc.). | 2.3 | 1.3 |
| 5. With view to internationalization and, in particular, the mobility of students rules for the recognition of activities completed at other (national and foreign) HEIs have to be adopted ("Lisbon Convention"). | 2.5 | |

6. The examination organization has to guarantee that the examinations accompany study and take place only on a course related basis.	4	4
7. The Diploma Supplement has to provide right information about the awarded degree. In addition to the final mark, statistical data need to be provided in accordance with the ECTS User Guide to assist in interpreting the individual grade.	7.2	1.3
8. The financing of the programmes has to be assured, at least for the accreditation period.	5.3	1.2

Recommendations

	ASIIN	ANQA
1. To ensure that all graduates achieve the intended fundamental competences it is recommended expanding the compulsory curriculum by further fields of informatics such as theory of computation, discrete mathematics, algorithm design and analysis, including education in modern programming environments and programme languages.	2.6	1.5
2. It is recommended tailoring/adjusting imported modules from other faculties to the students' needs for achieving the specific learning outcomes of this programme.	2.6	1.5
3. To enhance the professional qualification of the students it is recommended to train their soft skills and transferability competence, also by including a capstone project. Also the internship should be enlarged for this purpose.	2.4	1.6
4. It is strongly recommended to further develop the concept of quality assurance for the degree programmes and to use the results for continuous improvements. Feedback loops in the student evaluation should be organized in a more effective manner.	6.1, 6.2	1.7
5. It is recommended increasing the number of subject specific courses taught in English.	2.6	1.5
6. It is recommended that, with view to international competitiveness,	5.1	2.1

the scientific and research basis of the faculty is intensified.

7. It is recommended to expand support for mobility of both teaching staff and students.

3.4	

Ma Information Security and Ma Software Engineering

Condition to be met for resumption

The university has to provide evidence that the study programmes are constantly at the level of a Master's degree programme compared to level 7 of the European Qualifications Framework (EQF). Therefore the contents of the modules have to correlate with the intended qualification level, are based on research and development and would at least widen and deepen content that is already elaborated within the Bachelor's degree programmes if not presenting new content on a higher level. The admission requirements have to ensure that the students admitted, possess the required entry-competences. Compensation of missing prerequisites should not impact the level of teaching and learning in the programme. The module descriptions have to be completed and reworked accordingly.

ASIIN
1, 2.3, 2.5, 2.6, 5.1

(Possible) Requirements (upon resumption of the procedure and fulfillment of conditions above)

1. The information on objectives and intended learning outcomes of the programmes as a whole has to be accessible for the relevant stakeholders.
2. The module descriptions have to be updated, paying specific attention to those aspects as explained in the attached accreditation report (formulation of learning outcomes and module content / module requirements / examination requirements / module coordinators / frequency / examination policy).
3. With view to internationalization and, in particular, the mobility of students rules for the recognition of activities completed at other

ASIIN	ANQA
2.1, 2.2	1, 1.1
2.3	1.3
2.5	

(national and foreign) HEIs have to be adopted (“Lisbon Convention”).		
4. The Diploma Supplement has to provide right information about the awarded degree. In addition to the final mark, statistical data need to be provided in accordance with the ECTS User Guide to assist in interpreting the individual grade.	7.2	1.3
5. The financing of the programmes has to be assured, at least for the accreditation period.	5.3	1.2

(Possible) Recommendations

	ASIIN	ANQA
1. It is recommended tailoring imported/adjusting modules from other faculties to the students’ needs for achieving the learning outcomes.	2.6	1.5
2. To enhance the professional qualification of the students it is recommended to train their soft skills and transferability competence, also by including a capstone project. Also the internship should be enlarged for this purpose.	2.4	1.6
3. It is strongly recommended to further develop the concept of quality assurance for the degree programmes and to use the results for continuous improvements. Feedback loops in the student evaluation should be organized in a more effective manner.	6.1, 6.2	1.7
4. It is recommended increasing the number of subject specific courses taught in English.	2.6	1.5
5. It is recommended that, with view to international competitiveness, the scientific and research basis of the faculty is intensified.	5.1	2.1
6. It is recommended to expand the support for mobility of both teaching staff and students.	3.4	
7. It is recommended to use a learning management system software for supporting the educational process. Also, it is recommended to ensure free access to the IEEE/ACM digital libraries for the academic		6.3

staff and students in order to promote the scientific research.

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F Comments of the ASIIN Technical Committee 04 – Informatics/Computer Science (06 March 2014)

The Technical Committee discusses the procedure.

The Technical Committee reformulates requirement 7. Apart from that it agrees with the requirements and recommendations of the peers.

For the award of the ASIIN seal:

Apart from the wording in requirement 7 the Technical Committee fully agrees with the requirements and recommendations proposed by the peers.

Assessment and analysis for the award of the Euro-Inf® Label:

The Technical Committee deems that the intended learning outcomes of the Bachelor's degree programmes under review comply with the Subject-Specific Criteria of the Technical Committee 04 - Informatics.

The Technical Committee deems that the intended learning outcomes of the Master's degree programmes under review do not comply with the Subject-Specific Criteria of the Technical Committee 04 - Informatics.

The Technical Committee 04 – Informatics/Computer Science recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific labels	Maximum duration of accreditation
Ba Information Security	With requirements	Euro-Inf®	30.09.2019
Ba Software Engineering	With requirements	Euro-Inf®	30.09.2019
Ma Information Security	Suspension	Euro-Inf® Suspension	
Ma Software Engineering	Suspension	Euro-Inf® Suspension	

G Decision of the ASIIN Accreditation Commission (28.03.2014)

The Accreditation Commission discusses the procedure.

Regarding the Bachelor's degree programmes the Accreditation Commission applies some editorial corrections and changes on the conditions 1 and 2 and recommendations 1 and 3. The Accreditation Commission follows in all other respects the suggestions of the peers and the Technical Committee.

Regarding the Master's degree programmes the Accreditation Commission considers the degree programmes as not at the level of a Master's degree programme compared to level 7 of the European Qualifications Framework (EQF). But with the implementation of changes regarding the content, the modules and the admission requirements the Commission is confident that the university is able to adopt the Master's degree programmes to level 7 of the EQF within 18 months.

Assessment and analysis for the award of the Euro-Inf® Label:

The Accreditation Commission decides that the intended learning outcomes of the Bachelor's degree programmes under review comply with the Subject-Specific Criteria of the Technical Committee 04 - Informatics.

The Accreditation Commission decides that the intended learning outcomes of the Master's degree programmes under review do not comply with the Subject-Specific Criteria of the Technical Committee 04 - Informatics.

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

Degree Programme	ASIIN-seal	Subject-specific labels	Maximum duration of accreditation
Ba Information Security	With requirements	Euro-Inf®	30.09.2019
Ba Software Engineering	With requirements	Euro-Inf®	30.09.2019
Ma Information Security	Suspension	Euro-Inf® Suspension	
Ma Software Engineering	Suspension	Euro-Inf® Suspension	

Ba Information Security and Ba Software Engineering

Requirements

- A 1. (ASIIN 1, 2.1, 2.2, 2.6) The name of the study programmes has to reflect the curriculum and intended learning outcomes.
- A 2. (ASIIN 2.6) The informatics specific core curriculum has to be expanded. In doing so, subject related learning outcomes can be achieved more sustainably.
- A 3. (ASIIN 2.1, 2.2) The information on objectives and intended learning outcomes of the programmes as a whole has to be accessible for the relevant stakeholders.
- A 4. (ASIIN 2.3) The module descriptions have to be updated, paying specific attention to those details as explained in the attached accreditation report (formulation of learning outcomes and module content, examination requirements and policy, bibliographical references, etc.).
- A 5. (ASIIN 2.5) With view to internationalization and, in particular, the mobility of students, rules for the recognition of activities completed at other (national and foreign) HEIs have to be adopted (“Lisbon Convention”).
- A 6. (ASIIN 4) The examination organization has to guarantee that the examinations accompany study and take place only on a course related basis.
- A 7. (ASIIN 7.2) The Diploma Supplement has to provide correct information about the awarded degree. In addition to the final mark, statistical data need to be provided in accordance with the ECTS User Guide to assist in interpreting the individual grade.
- A 8. (ASIIN 5.3) The financing of the programmes has to be assured, at least for the accreditation period.

Recommendations

- E 1. (ASIIN 2.6) To ensure that all graduates achieve the intended fundamental competences it is recommended expanding the compulsory curriculum by further fields of informatics such as theory of computation, discrete mathematics, analysis and design of algorithms, including education in modern programming environments and programme languages.

- E 2. (ASIIN 2.6) It is recommended tailoring/adjusting imported modules from other faculties to the students' needs for achieving the specific learning outcomes of this programme.
- E 3. (ASIIN 2.4) To enhance the professional qualification of the graduates it is recommended to train their soft skills and transferability competence, also by including a capstone project. Also the internship should be enlarged for this purpose.
- E 4. (ASIIN 6.1, 6.2) It is strongly recommended to further develop the concept of quality assurance for the degree programmes and to use the results for continuous improvements. Feedback loops in the student evaluation should be organized in a more effective manner.
- E 5. (ASIIN 2.6) It is recommended increasing the number of subject specific courses taught in English.
- E 6. (ASIIN 5.1) It is recommended that, with view to international competitiveness, the scientific and research basis of the faculty is intensified.
- E 7. (ASIIN 3.4) It is recommended to expand support for mobility of both teaching staff and students.

Ma Information Security and Ma Software Engineering

Condition to be met for resumption

(ASIIN 1, 2.3, 2.5, 2.6, 5.1) The university has to provide evidence that the study programmes are constantly at the level of a Master's degree programme compared to level 7 of the European Qualifications Framework (EQF). Therefore the contents of the modules have to correlate with the intended qualification level, are based on research and development and would at least widen and deepen content that is already elaborated within the Bachelor's degree programmes if not presenting new content on a higher level. The admission requirements have to ensure that the students admitted, possess the required entry-competences. Compensation of missing prerequisites should not impact the level of teaching and learning in the programmes. The module descriptions have to be completed and reworked accordingly.

(Possible) Requirements

(upon resumption of the procedure and fulfillment of conditions above)

- A 1. (ASIIN 2.1, 2.2) The information on objectives and intended learning outcomes of the programmes as a whole has to be accessible for the relevant stakeholders.

- A 1. (ASIIN 2.3) The module descriptions have to be updated, paying specific attention to those aspects as explained in the attached accreditation report (formulation of learning outcomes and module content / module requirements / examination requirements / module coordinators / frequency / examination policy).
- A 2. (ASIIN 2.5) With view to internationalization and, in particular, the mobility of students, rules for the recognition of activities completed at other (national and foreign) HEIs have to be adopted (“Lisbon Convention”).
- A 3. (ASIIN 7.2) The Diploma Supplement has to provide correct information about the awarded degree. In addition to the final mark, statistical data need to be provided in accordance with the ECTS User Guide to assist in interpreting the individual grade.
- A 4. (ASIIN 5.3) The financing of the programmes has to be assured, at least for the accreditation period.

(Possible recommendations)

- E 1. (ASIIN 2.6) It is recommended tailoring imported/adjusting modules from other faculties to the students’ needs for achieving the learning outcomes.
- E 1. (ASIIN 2.4) To enhance the professional qualification of the graduates it is recommended to train their soft skills and transferability competence, also by including a capstone project. Also the internship should be enlarged for this purpose.
- E 2. (ASIIN 6.1, 6.2) It is strongly recommended to further develop the concept of quality assurance for the degree programmes and to use the results for continuous improvements. Feedback loops in the student evaluation should be organized in a more effective manner.
- E 3. (ASIIN 2.6) It is recommended increasing the number of subject specific courses taught in English.
- E 4. (ASIIN 5.1) It is recommended that, with view to international competitiveness, the scientific and research basis of the faculty is intensified.
- E 5. (ASIIN 3.4) It is recommended to expand the support for mobility of both teaching staff and students.

H Fulfillment of requirements for bachelor degree programmes Ba Software Engineering and Ba Information Security (27.03.2015)

Requirements

- A 1. (ASIIN 1, 2.1, 2.2, 2.6) The name of the study programmes has to reflect the curriculum and intended learning outcomes.

Gutachter	Erfüllt Begründung: Die neuen Curricula enthalten deutlich weniger allgemeine, d.h. mit dem Fach überhaupt nicht zusammenhängende Inhalte. Die beiden Spezialisierungsrichtungen haben jetzt jeweils Module im Umfang von 67 ECTS LP, die für sie spezifisch sind. Da man davon ausgehen kann, dass auch die „Extracurricular Parts“ (Praktika, Bachelorarbeit) mit 24 LP auf die Spezialisierungsrichtung bezogen werden, scheinen die beiden Studienrichtungen nunmehr hinreichend voneinander abgegrenzt. Alle Topics des Softwareengineering-Entwicklungszyklus werden behandelt. Die Module in der Spezialisierung Information Security sind nunmehr wesentlich fachbezogen und unterscheiden sich von denen in Software Engineering: u.a. Basics of Information Security, Database Security, Cryptographic Protection of Information.
TC 04	Fulfilled Reason: The Technical Committee agreed with the peers' vote.

- A 2. (ASIIN 2.6) The informatics specific core curriculum has to be expanded. In doing so, subject related learning outcomes can be achieved more sustainably.

Gutachter	Teilweise erfüllt Begründung: Die neuen Curricula enthalten deutlich weniger all-

	<p>gemeine, d.h. mit dem Fach überhaupt nicht zusammenhängende Inhalte. Überdies wurden in diesen Bereich zwei neue Module eingebaut, die sehr sinnvoll erscheinen (Teamwork and Interpersonal Relationships, Scientific Materials Preparation and Presentation). Im für beide Studienrichtungen verpflichtenden, gemeinsamen Teil sind jetzt alle Bereiche abgedeckt, die man von einem Informatik Studium beliebiger Spezialisierungsrichtung erwartet.</p> <p>Die Gutachter sehen jedoch für den Studiengang Information Security Probleme bei der Abfolge der Module:</p> <ul style="list-style-type: none"> - Introduction to Information Security im 1. Semester müsste später angeboten werden, da die inhaltlichen Grundlagen da noch nicht vorhanden sind; vom Umfang für 1+1 SWS auch viel zu viel Stoff - Cryptographic Protection of Information im 4. Semester müsste nach den mathematischen Grundlagen (Theory of Groups and Fields, Number Theory sind derzeit im 5. Semester) liegen bzw. mit diesen getauscht werden, da sonst das mathematische Verständnis fehlt.
TC 04	<p>Partly fulfilled</p> <p>Reason: Regarding requirement 2 the Technical Committee stated that the requirement is fulfilled but the order of the modules in the Bachelor's programme Information Security must be revised. "Introduction to Information Security" should not be offered in the first semester. Furthermore "Cryptographic Protection of Information" should take place after such modules as "Theory of Groups and Fields" or "Number Theory" are offered.</p>

A 3. (ASIIN 2.1, 2.2) The information on objectives and intended learning outcomes of the programmes as a whole has to be accessible for the relevant stakeholders.

Gutachter	<p>erfüllt</p> <p>Reason: Die Curricula und die Lernergebnisse sind auf der Webseite verankert. Das detaillierte Curriculum und die Modulbeschreibungen sind über das NPUA Quality Assurance Electronic System zugänglich.</p>
TC 04	<p>Fulfilled</p> <p>Reason: The Technical Committee agreed with the peers' vote.</p>

A 4. (ASIIN 2.3) The module descriptions have to be updated, paying specific attention to those details as explained in the attached accreditation report (formulation of learning outcomes and module content, examination requirements and policy, bibliographical references, etc.).

Gutachter	erfüllt Begründung: Die Modulhandbücher sind bis auf die Beschreibungen der Internships und der Abschlussarbeiten komplett und vorbildlich.
TC 04	Fulfilled Reason: The Technical Committee agreed with the peers' vote.

- A 5. (ASIIN 2.5) With view to internationalization and, in particular, the mobility of students, rules for the recognition of activities completed at other (national and foreign) HEIs have to be adopted ("Lisbon Convention").

Gutachter	Erfüllt Begründung: Anerkennungsregelungen entsprechend der Lissabon-Konvention sind für alle armenischen Hochschulen am 18.07.2013 verabschiedet worden und sind online verfügbar.
TC 04	Fulfilled Reason: The Technical Committee agreed with the peers' vote.

- A 6. (ASIIN 4) The examination organization has to guarantee that the examinations accompany study and take place only on a course related basis.

Gutachter	Erfüllt Reason: Die kumulative Abschlussprüfung wurde offenbar abgeschafft.
TC 04	Fulfilled Reason: The Technical Committee agreed with the peers' vote.

- A 7. (ASIIN 7.2) The Diploma Supplement has to provide correct information about the awarded degree. In addition to the final mark, statistical data need to be provided in accordance with the ECTS User Guide to assist in interpreting the individual grade.

Gutachter	Nicht erfüllt Begründung: Es wird auf eine landesweite Vorschrift verwiesen und ein allgemeines Muster für Diploma Supplements eingereicht. Studiengangsspezifisch ausgefüllte Diploma Supplements liegen nicht vor.
TC 04	Not Fulfilled

	Reason: The Technical Committee agreed with the peers' vote.
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A 8. (ASIIN 5.3) The financing of the programmes has to be assured, at least for the accreditation period.

Gutachter	Teilweise erfüllt Begründung: Die Hochschule gibt keinerlei Nachweise zur Finanzierung der Studienprogramme, weist aber darauf hin, dass Absolventen der Studiengänge auf dem Arbeitsmarkt sehr gefragt wären und die Anzahl der durch das Ministerium finanzierten Studienplätze noch steigen oder zumindest auf derzeitigem Stand bleiben würde.
TC 04	Fulfilled Reason: The Technical Committee considered the requirement as sufficiently fulfilled.

H-1 Decision of the Accreditation Commission (27.03.2015)

The Accreditation Commission discussed the procedure. It considered requirement 7 as not fulfilled.

The Accreditation Commission justifies its decision as follows:

The university provided only a general template for the Diploma Supplement. For the assessment of the fulfillment of requirement 7 the Diploma Supplements with subject-specific information are needed. It has to provide information about the study aims and (generic) learning objectives, nature, level, context, content and status of the studies specifically for each programme, the success of the graduate as well as about the composition of the final grade. In addition to the national grade, an ECTS grading table according to the ECTS Users' Guide needs to be foreseen.

Regarding requirement 2 the Technical Committee stated that the requirement is fulfilled but the order of the modules in the Bachelor's programme Information Security must be revised. "Introduction to Information Security" should not be offered in the first semester. Furthermore "Cryptographic Protection of Information" should take place after such modules as "Theory of Groups and Fields" or "Number Theory" are offered.

Regarding requirement 2 the Accreditation Commission considered the requirement itself as fulfilled, but the order of the modules in the Bachelor's programme Information Security should be revised. Therefore the Accreditation Commission added an additional recommendation.

Degree Programme	ASIIN-seal	Subject-specific labels	Maximum duration of accreditation
Ba Information Security	Requirement 7 not fulfilled*	Euro-Inf®	Six months extension
Ba Software Engineering	Requirement 7 not fulfilled*	Euro-Inf®	Six months extension

* An additional recommendation is added:

“For Ba Information Security:

(ASIIN 2.6) It is recommended to revise the order of the modules.”

I Resumption of accreditation of Master's degree programmes Ma Software Engineering and Ma Information Security

I-1 Assessment of the peers (20.08.2015)

In the eyes of the peers the university has provided sufficient evidence that the study programmes are almost constantly at the level of a Master's degree programme compared to level 7 of the European Qualifications Framework (EQF). Therefore the contents of the modules are in correlation with the intended qualification level, are based on research and development and would at least widen and deepen content that is already elaborated within the Bachelor's degree programmes if not presenting new content on a higher level.

The peers analyze the now stated admission requirements and come to the conclusion that they now ensure that the students admitted possess the required entry-competences. The module descriptions have been completed and reworked accordingly.

The peers unanimously consider the condition of resumption to be met.

Within the same assessment process the peers reconsider the forethought possible requirements. Some of them they consider to be fulfilled already, some need more attention in their eyes.

(Possible) Requirements (upon resumption of the procedure)

A 1. (ASIIN 2.1, 2.2) The information on objectives and intended learning outcomes of the programmes as a whole has to be accessible for the relevant stakeholders.

The peers unanimously consider the possible requirement as already fulfilled as shown by the university's documents.

A 2. (ASIIN 2.3) The module descriptions have to be updated, paying specific attention to those aspects as explained in the attached accreditation report (formulation of learning outcomes and module content / module requirements / examination requirements / module coordinators / frequency / examination policy).

The peers deem the possible requirement as already partly fulfilled. They argue that the module descriptions have obviously been updated and are now more specific and adding consecutively to the Bachelor while taking this knowledge as a base. They offer further

criticism regarding the content of the curricula. The peers state in their analysis that they deem the requirement to be only partly fulfilled because:

For the Master Information Security: Module contents are more specific now and base conclusively on the Bachelor education, but the offered Elective Courses I, II and III of each 5 or 4 Creditpoints contribute only marginally to the advanced subject-specific content because they focus on mathematic or economic aspects. Module descriptions of the module "Scientific Research Part" are missing. There is no mention of the Master's Thesis – peers wonder if it is meant by "scientific seminar".

For the Master Software Engineering: The Master programme Software Engineering has a certain focus on the topic of Parallel Programming and AI. The offered elective courses do not necessarily secure that Master students select modules in a way that the outcome is a precise profile. Some modules seem to be a bit outdated (i.e. Compiler Construction). The "Scientific Research Part" of the curriculum, therefore especially the specifications concerning the Master's Thesis are not described in detail.

A 3. (ASIIN 2.5) With view to internationalization and, in particular, the mobility of students, rules for the recognition of activities completed at other (national and foreign) HEIs have to be adopted ("Lisbon Convention").

The peers unanimously consider the possible requirement as already fulfilled as shown by the university's documents.

A 4. (ASIIN 7.2) The Diploma Supplement has to provide correct information about the awarded degree. In addition to the final mark, statistical data need to be provided in accordance with the ECTS User Guide to assist in interpreting the individual grade.

Peers differ here regarding their opinion: One thinks that the possible requirement cannot be judged by studying the presented documents, saying that the shown Diploma Supplement does not show adequate content. One argues that the possible requirement is already partly fulfilled, but that the Diploma Supplement is only acceptable when accompanied by a mandatory Transcript of Records.

A 5. (ASIIN 5.3) The financing of the programmes has to be assured, at least for the accreditation period.

Peers deem the possible requirement already as partly fulfilled. The university provides documents that testify positively to the positive occupational situation of graduates. It also promises that the financial situation is secured, at least for the accreditation period. Peers feel that there is no more evidence to be expected at this point.

Regarding the possible recommendations the peers do not comment on them singularly but point out that, in general, it is obvious that the university has discussed all recommendations and comments of the peer review team and that a positive development can be clearly discerned. Since recommendations are not relevant for the resumption, the auditors refrain from commenting any further.

(Possible recommendations)

- E 1. (ASIIN 2.6) It is recommended tailoring imported/adjusting modules from other faculties to the students' needs for achieving the learning outcomes.
- E 2. (ASIIN 2.4) To enhance the professional qualification of the graduates it is recommended to train their soft skills and transferability competence, also by including a capstone project. Also the internship should be enlarged for this purpose.
- E 3. (ASIIN 6.1, 6.2) It is strongly recommended to further develop the concept of quality assurance for the degree programmes and to use the results for continuous improvements. Feedback loops in the student evaluation should be organized in a more effective manner.
- E 4. (ASIIN 2.6) It is recommended increasing the number of subject specific courses taught in English.
- E 5. (ASIIN 5.1) It is recommended that, with view to international competitiveness, the scientific and research basis of the faculty is intensified.
- E 6. (ASIIN 3.4) It is recommended to expand the support for mobility of both teaching staff and students.

I-2 Comments of the ASIIN Technical Committee 04 – Informatics/Computer Science (10.09.2015)

The Technical Committee discusses the procedure and agrees with the peers' unanimous decision that the condition of resumption is met. In the eyes of the peers the university has provided sufficient evidence that the study programmes are almost constantly at the level of a Master's degree programme compared to level 7 of the European Qualifications Framework (EQF). Therefore the contents of the modules are in correlation with the intended qualification level, are based on research and development and would at least widen and deepen content that is already elaborated within the Bachelor's degree programmes if not presenting new content on a higher level.

The peers analyze the now stated admission requirements and come to the conclusion that they now ensure that the students admitted possess the required entry-competences. The module descriptions have been completed and reworked accordingly.

The Technical Committee agrees with the above and also with the peers' assessment that the possible requirements A 1, A3 and A 5 are already almost completely fulfilled and can therefore be dropped.

The Committee discusses A 2 and it comes to the conclusion, that the requirement been fulfilled, since the module descriptions have been revised as required. The module descriptions have been updated, including aspects such as formulation of learning outcomes and module content, module requirements, examination requirements, module coordinators, frequency, and examination policy.

The peers' criticism regarding the module descriptions appears to refer to the content of some of the modules and to some aspects of the curriculum. The peers state in their analysis that they deem the requirement to be only partly fulfilled.

Since the condition for resumption which also regarded the content at Master Level has been met, the peers only seem to criticize some aspects, because they do confirm that modules are generally more specific and are almost constantly at the level of a Master's degree programme compared to level 7 of the European Qualifications Framework (EQF). The Technical Committee concludes to recommend two new requirements (new A 1. and A 2.) regarding the peers' remarks, while accepting A 2. as fulfilled.

The Technical Committee discusses A 4. and regards the peers' vote as a possible misunderstanding. The sample Diploma Supplements the university provided do – other than stated by the peers – include all required information, including statistical data in accord-

ance with the ECTS Users' Guide. Additional information about module contents and single grades are given in the attached Academic Transcript of Records. The sample character of the documents might have been misleading.

The Committee decides to regard possible A 4. as fulfilled.

All former possible requirements are therefore fulfilled. Two new requirements are added to solve the problems seen by the peers with missing information in the module handbook.

Since the peers did not comment on the possible recommendations, the Technical Committee decides that they stay unchanged.

Assessment and analysis for the award of the Euro-Inf® seal:

The Technical Committee comes to the conclusion that the intended learning outcomes of the Master's degree programmes under review do comply with the Subject-Specific Criteria of the Technical Committee 04 - Informatics.

The Technical Committee 04 – Informatics recommends the award of the ASIIN seal as follows:

Degree Programme	ASIIN-seal	Subject-specific labels	Maximum duration of accreditation
Ma Information Security	With requirement	Euro-Inf®	30.09.2021
Ma Software Engineering	With requirement	Euro-Inf®	30.09.2021

Requirements (new, by TC 04)

A 1. (ASIIN 2.1) It should be ensured that the elective modules are targeted more towards the intended profiles of the programme.

A 2. (ASIIN 2.2) The description of the Master thesis (Scientific Research Part) should be provided.

Recommendations

(former possible recommendations, unchanged)

- E 1. (ASIIN 2.6) It is recommended tailoring imported/adjusting modules from other faculties to the students' needs for achieving the learning outcomes.
- E 2. (ASIIN 2.4) To enhance the professional qualification of the graduates it is recommended to train their soft skills and transferability competence, also by including a capstone project. Also the internship should be enlarged for this purpose.
- E 3. (ASIIN 6.1, 6.2) It is strongly recommended to further develop the concept of quality assurance for the degree programmes and to use the results for continuous improvements. Feedback loops in the student evaluation should be organized in a more effective manner.
- E 4. (ASIIN 2.6) It is recommended increasing the number of subject specific courses taught in English.
- E 5. (ASIIN 5.1) It is recommended that, with view to international competitiveness, the scientific and research basis of the faculty is intensified.
- E 6. (ASIIN 3.4) It is recommended to expand the support for mobility of both teaching staff and students.

I-3 Decision of the ASIIN Accreditation Commission (25.09.2015)

The Accreditation Commission discusses the procedure. It agrees that the conditions for resumption are met and discusses the proposed requirements. To clarify the circumstances it decides editorial modifications in requirement 2. In all other aspects the accreditation commission follows the recommendation of the Technical Committee 04.

Assessment and analysis for the award of the Euro-Inf® seal:

The Accreditation Commission comes to the conclusion that the intended learning outcomes of the Master's degree programmes under review do comply with the Subject-Specific Criteria of the Technical Committee 04 – Informatics.

The Accreditation Commission decides the award of the ASIIN seal as follows:

Degree Programme	ASIIN-seal	Subject-specific labels	Maximum duration of accreditation
Ma Information Security	With requirements for one year	Euro-Inf®	30.09.2021
Ma Software Engineering	With requirements for one year	Euro-Inf®	30.09.2021

Requirements

A 1. (ASIIN 2.1) It should be ensured that the elective modules are targeted more towards the intended profiles of the programme.

A 2. (ASIIN 2.2) The expectations for an academic master thesis module must be clearly formulated in the module handbook.

Recommendations

E 1. (ASIIN 2.6) It is recommended tailoring imported/adjusting modules from other faculties to the students' needs for achieving the learning outcomes.

- E 2. (ASIIN 2.4) To enhance the professional qualification of the graduates it is recommended to train their soft skills and transferability competence, also by including a capstone project. Also the internship should be enlarged for this purpose.
- E 3. (ASIIN 6.1, 6.2) It is strongly recommended to further develop the concept of quality assurance for the degree programmes and to use the results for continuous improvements. Feedback loops in the student evaluation should be organized in a more effective manner.
- E 4. (ASIIN 2.6) It is recommended increasing the number of subject specific courses taught in English.
- E 5. (ASIIN 5.1) It is recommended that, with view to international competitiveness, the scientific and research basis of the faculty is intensified.
- E 6. (ASIIN 3.4) It is recommended to expand the support for mobility of both teaching staff and students.

J Fulfillment of last requirement for Bachelor's degree programmes Ba Software Engineering and Ba Information Security (21.07.2015)

J-1 Assessment of the peers (20.08.2015)

The peers deem the remaining last requirement A 7. as only partly fulfilled. In their eyes the university has not provided specific Diploma Supplements, only samples without the complete necessary information.

J-2 Comments of the ASIIN Technical Committee 04 – Informatics/Computer Science (10.09.2015)

The Technical Committee discusses the procedure and sees that the requirement has been fulfilled.

The Diploma Supplements provided by the University were in their analysis first misinterpreted by the peers, seen only as samples without specific information. That is why they judged the requirement to be only partly fulfilled at first.

The Technical Committee analyzes the Supplements another time, they see that there is specific information contained in the provided documents: Each sample of Diploma Supplement is exemplary personalized. Under 4.3 the courses are listed including the ECTS, there also is a reference to the Academic Transcript: "For the details of individual grades /marks/ credits obtained, please look at the attached Academic Transcript". The attached Academic Transcript does indeed include the complete list of modules.

The Technical Committee deems the requirement to be completely fulfilled. The university has provided specific examples for Diploma Supplements and Academic Transcripts. The Technical Committee recommends to include a mention to the University that it should be ensured that the Academic Transcript is indeed always attached to the Diploma Supplement.

J-3 Decision of the ASIIN Accreditation Commission (25.09.2015)

The Accreditation Commission discusses the procedure and the obvious misunderstanding regarding the Diploma Supplements. It comes to the conclusion that the remaining requirement is indeed fulfilled.

The Accreditation Commission decides the award of the ASIIN seal as follows:

Degree Programme	ASIIN-seal	Subject-specific labels	Maximum duration of accreditation
Ba Information Security	Remaining requirement 7 fulfilled	Euro-Inf®	30.09.2020
Ba Software Engineering	Remaining requirement 7 fulfilled	Euro-Inf®	30.09.2020

The Accreditation Commission decides to include the following remark into the cover letter to the university:

„It is to be ensured that the Academic Transcript is indeed always attached to the Diploma Supplement.“

K Fulfilment of Requirements for the a Software Engineering and Ma Information Security (30.09.2016)

K-1 Analysis of the peers and the Technical Committee/s (07.09.2016)

Requirements

A 1. (ASIIN 2.1) It should be ensured that the elective modules are targeted more towards the intended profiles of the programme.

Erstbehandlung	
Peers	Fulfilled Explanation: Master Information Security: More relevant elective modules targeted towards the intended profile of the study programme were introduced. The peers noticed that the listed literature is not always state-of the-art. Masters Software Engineering: The offered elective modules fit the intended profile of the study programme and the outdated module "Compiler Construction" was replaced by the module "Software Verification and Validation".
TC 04	Fulfilled

A 2. (ASIIN 2.2) The expectations for an academic master thesis module must be clearly formulated in the module handbook.

Erstbehandlung	
Peers	Fulfilled Explanation: The HEI provided a module description for the master thesis including the academic expectations.
TC 04	Fulfilled

K-2 Decision of the Accreditation Committee (30.09.2016)

The Accreditation Commission discusses the procedure and follows the assessment of the peers and the technical committee. It comes to the conclusion that the remaining requirements are fulfilled.

The Accreditation Commission decides the award of the ASIIN seal as follows:

Degree Programme	ASIIN-seal	Subject-specific labels	Maximum duration of accreditation
Ma Information Security	Requirements fulfilled	Euro-Inf®	30.09.2021
Ma Software Engineering	Requirements fulfilled	Euro-Inf®	30.09.2021