



ASIIN Seal & European Labels

Accreditation Report

Bachelor's Degree Programme
Electronics and Communication Engineering
Software Engineering
Management Information Systems

Provided by
European University of Lefke

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A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for ¹	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC) ²
Ba Electronics and Communication Engineering	-	ASIIN, EUR-ACE® Label	-	02
Ba Software Engineering	-	ASIIN, Euro-Inf® Label,	-	04
Ba Management Information Systems	-	ASIIN, Euro-Inf® Label,	-	02, 04
Date of the contract: 27.12.2016 Submission of the final version of the self-assessment report: 10.04.2017 Date of the onsite visit: 13.-14.06.2017 at: Lefke, North Cyprus				
Peer panel: Prof. Dr. Bettina Harriehausen, Darmstadt University of Applied Science; Prof. Dr. Madhukar Chandra, Technical University Chemnitz; Prof. Dr.-Ing. Peter Forbrig, University of Rostock; Cihan Ünal, School of Computing and Technology Eastern Mediterranean University				
Representative of the ASIIN headquarter: Dr. Martin Foerster				
Responsible decision-making committee: Accreditation Commission for Degree Programmes				

¹ ASIIN Seal for degree programmes; EUR-ACE® Label: European Label for Engineering Programmes; Euro-Inf®: Label European Label for Informatics

² TC: Technical Committee for the following subject areas: TC 02 - Electrical Engineering/Information Technology; TC 04 - Informatics/Computer Science.

Criteria used:

European Standards and Guidelines as of 15.05.2015

ASIIN General Criteria, as of 10.03.2015

Subject-Specific Criteria of Technical Committee 02 – [Electrical Engineering/Information Technology] as of 09.12.2011; 04 – [Informatics] as of 09.12.2011

B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF ³	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Electronics and Communication Engineering	B.Sc.		6	Full time	-	8 Semester	240 ECTS/142 Cypriot Credits	Fall semester / Fall 2007
Software Engineering	B.Sc.		6	Full time	-	8 Semester	240 ECTS/138 Cypriot Credits	Fall semester / Fall 2008
Management Information Systems	BA		6	Full time	-	8 Semester	240 ECTS/133 Cypriot Credits	Fall semester / Fall 2007

For the Bachelor's degree programme Software Engineering the institution has presented the following profile on the programme's website (accessed on 26 June 2017: <http://www.eul.edu.tr/en/academic/faculties/faculty-of-engineering/software-engineering/>):

„The Department of Software Engineering deals with the entire process of software manufacturing. Software Engineering does not only involving writing software programmes but also includes the preparation and administration of quality of software development using time and budgets efficiently. The field also includes the implementation of various software principles and disciplines.

Department of Software Engineering aims to teach our students the latest software technology, to bring up well trained and quality software experts. It is amongst our leading goals to create creative individuals who can use modern information technologies to design progressive software programmes.

In addition to basic engineering courses such as mathematics and physics, all freshman and junior year students are required to take English, introduction to software engineer-

³ EQF = The European Qualifications Framework for lifelong learning

ing, design and analysis of information systems, algorithmic, procedural and object based programming techniques, and basic programming courses (mainly 3rd generation programming languages such as C and C++).

Junior year students (3rd year), in addition to standard software engineering courses, are required to take courses on software requirements, analysis, software design and architecture, programming quality, software standards as well as computer-human interaction, computer networking, databases and administration systems.

Senior students (4th year final year) will be asked to pick 5 technical electives offered during the final semester (focusing mainly on 3rd generation programming languages Java and C#) in line with their area of interest. Students will also be required to submit a graduation program which will be spread to the final two semesters of the 4th year. The final project will be carried out under the supervision of an advisor to be picked by the student. “

For the Bachelor's degree programme Electronics and Communication Engineering the institution has presented the following profile on the programme's website (accessed on 26 June 2017: <http://www.eul.edu.tr/en/academic/faculties/faculty-of-engineering/electronics-and-communication-engineering/>):

„The degree focuses on communications technology and thus gives its students a solid base for theoretical and practical knowledge on digital communications, systems design and analysis, digital imaging, computer hardware and software, and the practical application of engineering principle. Graduates of this programme are also expected to become creative individuals who can use their skills to advance in their careers.

Students find the opportunity to benefit not only from the theoretical basis provided to them but also apply practically what they have learnt at the lab facilities at the university.

Students have access to several up-to-date and well-resourced facilities, such as our Physics Laboratory, General Computer Laboratories, Electronics Laboratory, Digital Electronics and Microprocessor Laboratory, Computer-Aided Design Laboratory and Computer Networks Laboratory.

Students enrolled at the department are allowed to take classes on communication, electronics and computer networks, computer engineering and software engineering. As a result students are able to acquire expertise in fields such as electronics, control, and computer equipment and communication systems. Elective courses include subjects such as economics, business as well as foreign languages.

In the final year of studies, students, through a 'graduation project' they will need to complete will find the opportunity to witness all steps of the cycle of design. The project which starts in the 7th semester with the steps such as determining feasibility and design is followed in the 8th semester with production, testing and reporting stages. The projects are completed with a presentation. Students are also encouraged to take part and participate in ongoing research projects being conducted at the university. Since such activities contribute to developing students' capabilities at an individual level, the department attaches great importance to participation in such projects.

Having taken courses on ethics, economy and business in the 7th and 8th semesters, just before graduation, students acquire a firm grasp and understanding of the working environment and business world, allowing them to set their first steps into the real world with a strong sense of self-confidence."

For the Bachelor's degree programme Management Information Systems the institution has presented the following profile in the Self-Assessment-Report:

„The Management Information Systems (MIS) programme, which runs under the School of Applied Sciences, is a unique specialization that combines Information Technology, Management and Economics. Information and its technological applications can now be considered essential to any modern country's development, both economically and technologically. The programme integrates management and computer science elements leading to a four year Bachelor degree.

General aims of the programme are to:

Provide students the theoretical and interdisciplinary training necessary for academic and/or career advancements.

Graduate individuals who are able to keep up with the latest developments and aware of the problems of the era,

Provide students necessary skills to be able to work as a part of a team or alone, and additional skills to take part in national and international projects

Provide students skills to critically think, write and speak,

Provide the students with develop an appreciation of and respect for social, moral and ethical values to the community. "

C Peer Report for the ASIIN Seal⁴

1. The Degree Programme: Concept, content & implementation

Criterion 1.1 Objectives and learning outcomes of the degree programmes (intended qualifications profile)
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Evidence:

- Learning outcomes for Bachelor Software Engineering and Electronics and Communication Engineering presented on the website (accessed 26 June 2017);
 - <http://www.eul.edu.tr/en/academic/faculties/faculty-of-engineering/electronics-and-communication-engineering/>
 - <http://www.eul.edu.tr/en/academic/faculties/faculty-of-engineering/software-engineering/>
- SSC-based Objectives-Module-Matrices for all programmes in the respective Self-Assessment Reports
- Diploma Supplements

Preliminary assessment and analysis of the peers:

For all study programmes under review the HEI presented Objective-Module-Matrices matching the respective learning outcomes of the modules with the Subject Specific Criteria of the Technical Committees involved. A more generic description of the learning outcomes of the respective programmes is also presented on the programme website with the exception of the Bachelor Management Information Systems. For this programme no internet presentation could be found. While the peers considered the matrices as well as the internet publication exemplary they added that a similar presentation online should be provided for all programmes in order to achieve a maximum transparency and to inform all stakeholders as well as those interested in the study programmes about its contents.

⁴ This part of the report applies also for the assessment for the European subject-specific labels. After the conclusion of the procedure, the stated requirements and/or recommendations and the deadlines are equally valid for the ASIIN seal as well as for the sought subject-specific label.

The peers learned during the onsite visit that frequent consultation about the further development of the curricula is held, internally as well as externally, for example with industry representatives. Given the limited size of North Cypriot industry the peers understood that most graduates are being educated less for a local economy but for the industry of the respective home countries. Consequently, the revision of the curricula also has to take into account the demands presented by international industry representatives from countries that send larger groups of students for the programmes under review such as Pakistan. By far, the largest group of students in the programmes comes from Turkey; hence, all programmes need to comply with the curriculum requirements posed by the Higher Education Council of Turkey (YÖK) that defines what a graduate seeking to work in Turkey needs to have studied for certain professions. In addition, the HEI is forced to include some courses such as Chemistry in the Bachelor Software Engineering programme whose relation to the programme learning outcomes is limited according to the peers. Nevertheless, the auditors could understand the HEI's needs to comply with these regulations for economical reasons. At the same time, the Bachelor programmes encompass eight semesters, therefore no fundamental subject-specific courses need to be left outside.

The described learning outcomes as well as the Objectives-Module-Matrices were considered by the peers to be very precise, detailed but not over-extensive covering all important aspects of the Subject-Specific-Criteria (SSC). For all programmes the co-ordinators defined a set of general educational objectives and more specific programme outcomes (see Appendix) that have been matched with the SSC of the Technical Committees 02 and 04. In another matrix the defined programme outcomes have been related to the respective modules thus clearly indicating in which module are being conveyed which qualifications.

Consequently, it became clear that students enrolled in the Bachelor Software Engineering will acquire a fundamental understanding of central concepts and methods of their discipline including mathematics, natural sciences and computing. Further they are being taught current programming methodologies as well as the analyses of algorithms and data structures. They are also capable of applying design principals, methods and skills, using current tools and techniques necessary for efficient and effective software engineering practice and communicating about these ideas verbally and in writing to both experts and non-technical people. In addition, graduates will be able to appreciate the economic, business, judicial, ethical, global, environmental and societal impacts of software engineering, and they shall be aware of the processes involved in the delivery and management of information systems within commercial settings.

For the Bachelor Management Information Systems similar learning outcomes have been defined. According to the matrix, students will acquire scientific foundations necessary for managing and maintaining information systems, applying knowledge of computing, logic and mathematics where necessary when solving problems. Also, they shall have basic knowledge regarding technical concepts and practices in IT when working with key information systems, such as operating systems, database systems, communication systems and networks. They are aware of current-day problems having an adequate understanding of professional, ethical, legal, security and social issues while also being enabled to work in an interdisciplinary research team and presenting their results effectively in word and writing.

For the Bachelor Electrical and Communication Engineering the HEI similarly presented a precise matrix including eleven programme outcomes well matched to the SSC of the Technical Committee 02. Thus, students will gain broad and sound knowledge in mathematics, natural sciences and engineering including complex phenomena related to Electronics and Communications, enabling them to apply this knowledge to engineering problems. They will be able to simulate and experimentally validate, gather data, analyse, critique, document and present results, they can recognize, identify, formulate and solve complex engineering problems and have basic knowledge of project management and risk management methods. Further, graduates will have gained the ability to design a complex system, electrical/electronic circuit, communication system, process or product according to given specifications, via consultation of norms, guidelines and safety regulations, considering criteria and conditions such as economics, environmental problems, sustainability, manufacturability, ethics, health, safety, socio-political problems and the ability to apply modern design methods to achieve the above.

Furthermore, the University applies for the EUR-ACE® (European Accredited Engineer) Label for the Bachelor Electrical and Communication Engineering. The EUR-ACE® Label is a quality certificate for engineering degree programmes and is recognized Europe-wide. During the accreditation process, the reviewers verified whether the degree programme complies with the criteria fixed in the EUR-ACE Framework Standards. The SSC of the Technical Committee 02 - Electrical Engineering/Information Technology are closely linked to the EUR-ACE Framework Standards; consequently, the analysis of the Subject-Specific Criteria encompasses the EUR-ACE Framework Standards. The peers confirm that the EUR-ACE Framework Standards regarding the intended learning outcomes are fulfilled for the Bachelor Programme in line with the Bologna Declaration.

In addition, the University applies for the Euro-Inf® (European Informatics) Label for the Bachelor Software Engineering and the Bachelor Management Information Systems. The Euro-Inf® Label is a quality certificate for informatics degree programmes and is recog-

nized Europe-wide. During the accreditation process, the reviewers verified whether the degree programmes comply with the criteria fixed in the Euro-Inf® Framework Standards. The Subject-Specific Criteria (SSC) of the Technical Committee for Informatics are closely linked to the Euro-Inf® Framework Standards; consequently, the analysis of the Subject-Specific Criteria encompasses the Euro-Inf® Framework Standards. The peers confirm that the Euro-Inf® Framework Standards regarding the intended learning outcomes are largely fulfilled for the Bachelor Programmes in line with the Bologna Declaration. However, as will be outlined under criterion 3, the peers considered the graduation project of the Bachelor Management Information Systems to be not yet correspondent to EQF-level 6 as well as the Euro-Inf® criteria. Hence, for this programme it might have to be waited until the improvement of the quality standards has been documented by the HEI until the label can be awarded.

In conclusion, the peers clearly saw that the described learning outcomes for all three degree programmes adequately reflect the ASIIN Subject-Specific Criteria as well as the EQF-level 6 for Bachelor programmes.

Criterion 1.2 Name of the degree programmes
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Evidence:

- Websites for Bachelor Software Engineering and Electronics and Communication Engineering (accessed 26 June 2017);
 - <http://www.eul.edu.tr/en/academic/faculties/faculty-of-engineering/electronics-and-communication-engineering/>
 - <http://www.eul.edu.tr/en/academic/faculties/faculty-of-engineering/software-engineering/>
- Self-Assessment Reports
- Diploma Supplements

Preliminary assessment and analysis of the peers:

The panel considered the names of the study programmes to be adequately reflecting the respective aims and learning outcomes.

Criterion 1.3 Curriculum

Evidence:

- Curricula for all programmes are being presented in the Self-Assessment Reports
- Diploma Supplements
- SSC-based Objectives-Module-Matrices for all programmes in the respective Self-Assessment Reports
- Module Handbooks

Preliminary assessment and analysis of the peers:

The curricula of all study programmes under review were being revised by the panel in order to identify whether the described learning objectives can be achieved by the available modules. In Software Engineering the first study year serves to convey basic knowledge in natural sciences in general (“Physics”, “Chemistry”, “Calculus” and “Linear Algebra”) as well as Informatics (“Computing foundations”, “Computer Programming”). Students also have to attend a few non-technical courses such as “English” and “Turkish”. In the second and third year, students’ qualifications in programming, analysis and design are being enhanced in modules such as “Data Structures”, “Object-Oriented Programming”, “Software Engineering”, “System Analysis and Design” or “Human-Computer-Interaction”. After the third year, all students have to perform a thirty-days working practice that is reflected in a so-called “summer-training Log-Book” and therefore supervised by the HEI. In the final year, students take five elective courses in addition to the compulsory courses “Software Project Management”, “Engineering Economy”, “Engineering Ethics” and “Entrepreneurship and Leadership”. The topics of the electives include a variety of aspects such as “Artificial Intelligence”, “Introduction to Robotics” or “3D Computer Graphics”. During the final year, students also have to prepare their graduation project split in two modules at a total value of 15 ECTS-credits. From the curriculum the peers were convinced that all learning objectives described above can be reached by the programme.

The curriculum of Management Information Systems is partly similar. Students likewise start with foundations in informatics (“Introduction to Programming”, “Computer Programming”) and natural sciences (“Discrete Mathematics”) with an additional introduction to economics (“Principles of Microeconomics”, “Mathematics for Business & Economics I + II”). As in the other programme courses in “English” and “Turkish” are also compulsory. The second year enhances the students’ skills in Management, Business and Informatics including courses in “Data Analysis”, “Systems Analysis and Design”, “Princi-

ples of Operating Systems”, “Statistics”, “Principles of Marketing” and “Financial Accounting”. In the third year, the focus is less on economic but on informatics aspects also including to elective courses. Students acquire competences in “Data Communications and Computer Networks”, “Internet Information Systems”, “Network Security” or “Management Information Systems” before they enter their work practice during the summer months. In the final year, competences in project management are conveyed while students choose five electives that allow for a specializations before they start their graduation project in the final semester. However, different to Software Engineering, the graduation project of the MIS-programme is assessed only with 6 ECTS credits what is deemed insufficient by the peers. During the discussion with the programme coordinators the point was brought up and it became apparent, that the issue has already been noted. It is envisaged to extend the graduation project to two semesters as in the other programmes in order to achieve better results meeting the EQF level requirements.

In Electronic and Communication Engineering students also acquire basic computer knowledge and programming skills (“Computing Foundations”, “Computer Programming” and “Computer Architecture”) during the first year in addition to non-technical courses (“English “, “Turkish”), introductory courses to Natural Sciences (“Physics” and “Chemistry”) and Mathematics (“Calculus”, “Linear Algebra”, “Engineering Maths”). In the second year, a focus is directed toward aspects of electrical engineering in courses such as “Digital Circuits”, “Electrical Materials”, “Engineering Mathematics” or “Electromagnetic Theory”. In the second half of the curriculum, students may specialize themselves through seven elective courses on topics in communications, signal processing and electronics. Also, after the third year, students take their 30-days working practice during the summer. Eventually, in the fourth year, the graduation project assessed with 14 ECTS-credits has to be prepared. The electives are being accompanied by courses and “Entrepreneurship and Leadership”, “Engineering Ethics” and “Technical Writing”. While the peers were convinced that the curriculum covers all relevant aspects of the SSC they criticized that the great variety of electives does not clearly guide the students towards a certain specialization. If not taken in a systematic way contents may overlap unnecessarily. Therefore, the peers considered it necessary that roadmaps should be developed that indicate several possible specializations by combining certain electives. Thus, areas of specialization might be clearly defined and also outlined in the Diploma Supplement.

A critical aspect outlined by the peers in all three programmes is the work practice of thirty days after the third study year. Although the integration of practical work experience appeared to be laudable, the peers emphasized that all courses that are a compulsory part of the curriculum need to be assigned an adequate number of ECTS-credits reflecting the demanded workload. In Software Engineering as well as Electrical and Com-

munication Engineering the work practice is not assigned any credits at all, in Management Information Systems only two ECTS-credits. The peers calculated that thirty days per eight hours work are a total of 240 hours including the preparation of the Log-Book, etc. If an ECTS-credit is based on about thirty hours of workload the work practice should equal more or less eight ECTS-credits.

Nevertheless, apart from this aspect, the peers were very content with the curricula and could identify no obstacle that would prevent the achievement of the outlined learning objectives.

Criterion 1.4 Admission requirements

Evidence:

- Admission Requirements on the University website (accessed 27 June 2017: <http://www.eul.edu.tr/en/student-affairs/admissions-requirements/undergraduate-and-graduate-students/>)

Preliminary assessment and analysis of the peers:

From the information presented on the University website, the peers gathered all relevant information about the admission requirements to undergraduate programmes at Lefke University. Generally, candidates should have completed a minimum of 12 years of secondary education or equivalent. In addition, there are also English language requirements for direct admission into the degree programmes. Students who scored minimum 5.5 from the IELTS examination within the last two years, or an equivalent score from other international English language proficiency examinations will be exempted from the EUL English Preparatory School (EPS) programme. Students who have no documents regarding their English language level are required to take the EUL EPS Placement Test. If successful, these students are directly sent to the Faculty for their intended programme of study. Students who have taken O-levels, A-levels, the International Baccalaureate or Advanced Placement exams will be considered for direct entry for undergraduate courses.

During the on-site-visit the peers discussed with the staff the English language proficiency of the students since they considered 5.5 an acceptable but not very advanced level. It was explained that certainly English is a challenge to some of the students mostly those coming from Turkey, but that the compulsory English language courses integrated into the curricula as well as additional course offers were sufficient to guarantee an adequate

understanding for all students. During the discussion with the students, the peers could also gain a good impression of their English language level and were quite content with it.

Consequently, the peers found the admission requirements for all programmes suitable, easily accessible and transparent.

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

Based on the comments and additional material provided by the HEI the peers appreciate that the website of the Ba Management Information Systems is now available and that learning outcomes are being presented as for the other programmes.

Regarding the MIS graduation project the peers are pleased to see that the Quality Assurance and Curriculum committee of the programme have already presented measures that might be taken in order to increase the value of the project. The peers deem the proposals to be very adequate. However, they agree with the HEI that their criticism shall be kept up until the indicated measures have been fully introduced.

They also appreciate it that their recommendation for the development of roadmaps for certain specializations in Ba ECE has been taken up by the programme co-ordinators and that measures will be introduced by fall 2017. For a final assessment the peers will await a documentation of the initiated developments.

Further, the HEI agrees with the peers that the award of ECTS-credits for the work practice is a critical issue. The programme co-ordinators state that measures will be discussed in the Faculty of Engineering as well as the School of Applied Sciences. Similarly, the peers will expect the HEI to document the measures taken.

In conclusion, the peers agree that this criterion is partly fulfilled.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules
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Evidence:

- Curricula for all programmes as presented in the Self-Assessment Reports
- Diploma Supplements

- SSC-based Objectives-Module-Matrices for all programmes in the respective Self-Assessment Reports
- Module Handbooks

Preliminary assessment and analysis of the peers:

All study programmes under review are divided into modules which comprise a sum of teaching and learning. The panel found the structure of the modules in general to be adequate and manageable for all stakeholders.

As described above, the curricula offer a great variety of electives, leaving sufficient options for the students to set individual and flexible focuses on certain specializations. Furthermore, the curricula are constantly being revised and adapted to the changing demands from future employers, although in some aspects they have to reflect the structure defined by YÖK. In general, the peers were convinced, that the programme structures allow for an individual yet goal-oriented order of study in the designated time.

From the visit of the laboratories and the descriptions of the modules the peers could apprehend that many courses implicate practical approaches that provide students with the necessary experience required for working in industry. The only internship forming part of all curricula is the 30-days work experience, which was principally estimated to be well in place, but as has been outlined before it must be officially included into the curricula and endowed with the respective ECTS-credits. The peers understood that the work experience during the summer holidays allows students to carry it out wherever they prefer, which is in most cases in their home countries. Since the majority of the students return to their home countries for work after the completion of their studies this was thought to be absolutely reasonable. Through the compilation of the Log-Book the university at the same time ensures that the working performance and the learning progresses are being documented.

International mobility is only of marginal importance for the programmes under review because of the internationality of their students. For most students the stay at Lefke is already an international experience. At the same time, due to the political circumstances of Northern Cyprus, students are excluded from participation in Erasmus-partnerships. However, the university does have a limited number of bilateral agreements with other universities that allow students to go abroad if they wish. A laudable example of these efforts was found to be the co-operation with Bradford University in England where talented students may partake in a dual degree programme. In any case, regulations for the recognition of competences and achievements acquired at other universities are publicly accessible through the website and are well in place.

Consequently, the peers were of the opinion that the structure of the curricula and modules were well organized and support an effective study progress.

Criterion 2.2 Work load and credits

Evidence:

- Module Handbooks
- Self-Assessment Reports
- Audit discussions

Preliminary assessment and analysis of the peers:

The peers learned from the discussions during the on-site visit that the workload of all courses is regularly assessed as part of the course evaluations and that modifications are being introduced in case of grave differences. All courses are assigned with local as well as ECTS-credits although the calculation of the credits did not become absolutely clear to the peers. They understood that the Cypriot calculation is orientated to the American system where different tasks such as lectures, home work or lab work are calculated at a different rate of time hours. Nevertheless, it appeared to the panel that these calculations are not always absolutely consistent, especially if compared to the transfer into ECTS-credits. The most apparent example for these small incongruities is the overall calculation indicated for the respective study programmes. While according to the self-assessment report all three programmes consist of 240 ECTS-credits, the Bachelor Management Information Systems programme consists of 133 local Credits, Software Engineering of 138 and Electrical and Communication Engineering of 142 credits. Therefore, the peers deem it necessary to improve the consistency of the calculations. Since 1 ECTS-credit is usually calculated with 25-30 time hours, it might be helpful to indicate the envisaged distribution of hours in the module descriptions thus creating a maximum of transparency for the students. Nevertheless, discussion with the students made clear that the workload is continually being assessed and revised and is considered to be usually not excessive.

Criterion 2.3 Teaching methodology

Evidence:

- Self-Assessment Reports
- Audit discussions

Preliminary assessment and analysis of the peers:

It has already been outlined that teaching in the three programmes includes many practical approaches which was welcomed by the peers. In general, teaching includes lectures, classroom exercises, tutorials, group exercises, laboratory work, group and individual projects as well as seminars. From the discussion with the teaching staff it became apparent that the teaching methodology includes modern didactical approaches and technological innovations. Materials for all modules are being presented on the platform Moodle where also details about the schedule, assignments, etc. are made accessible. Several staff members explained to the panel how they involved practical approaches and real-life project work into their courses in order to keep up student enthusiasm. The peers liked how the teaching staff emphasized industry co-operations in order to prepare their students to normal work cycles, project management and industry demand.

During the on-site-visit the peers also gained a very positive impression of the laboratories available which are not only equipped with modern technology but also offer handbooks for several courses that allow students in self-study to understand experiments, how to perform them and how to advance. In sum, the peers were convinced that the teaching methodology applied in the programmes under review is state-of-the-art and ensures the learning progress of all students.

Criterion 2.4 Support and assistance

Evidence:

- Self-Assessment Reports
- Audit Discussions
- On-site-visit

Preliminary assessment and analysis of the peers:

The panel had a very good impression from the offers related to support and assist the students. They learned that for the EUL it is of primary importance that all students are constantly advised about and supervised in their progresses. Thus, students who continue to struggle or have bad results in various exams are being contacted and, in case, even recommended to change their subject of study. This step, although quite radical, impressed the peers since it expressed the university's focus on the high quality of teaching and learning instead of profit through student fees.

On the newly constructed campus the students are offered a great variety of recreative space as well as support options, they have access to psychological counselling, medical care and a wide range of cultural activities with special focus on the multicultural background of the students. However, the isolated location of the campus was seen positive as well as negative by the students. While many opined that it offered perfect conditions to focus completely on the work, others criticized that more alternative occupations might be offered, also by the department. The peers liked the idea expressed by the students of further promoting international competitions for example in robotics or other fields that would offer entertainment as well creative space for the students.

Regarding the professional support in their studies the students commended the staff's dedication. Teachers were usually open to questions and easy to contact. The only thing that could be improved is the number of lab assistants so as to help the students in their self-studies while they use the otherwise well-prepared laboratories. All in all, the peers concluded that the support and assistance offered is beneficial to the academic success.

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

The peers appreciate it that the HEI will discuss the issue consistent calculation of ECTS-credits; for a final assessment they will have to wait until the modifications are being documented by the HEI.

Regarding the lab assistants the peers understand that the Faculty of Engineering has already come to the same conclusion and that a request for extra lab assistants has been made with the rectorate.

In conclusion, the peers considers this criterion to be predominantly fulfilled.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation
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Evidence:

- SSC-based Objectives-Module-Matrices for all programmes in the respective Self-Assessment Reports
- Self-Assessment Reports
- Module Handbooks
- Audit discussions

Preliminary assessment and analysis of the peers:

Each course-content in the reviewed study programmes is reflected in exams which are distributed in two examination periods each semester, the midterm and the final period. The exams are usually taken in the form of a written test while additional tasks such as homework, quizzes, project works and presentations make use of alternative examinations forms. Consequently, the panel suggested that oral exams should also be part of the regular curriculum, not only in form of oral presentations. While the skill to give a previously prepared presentation is certainly important, students should also be able to answer spontaneously asked questions demonstrating their flexibility and creativity on previously defined fields of study.

The dates of the exams are scheduled in advance at the beginning of each year while the type of the exam is announced to the students at the beginning of each semester. Re-sit exams for the final exams are offered each semester after the grades are announced and before the registration for the next semester. Additionally, an election of courses is also offered each summer in form of a condensed summer school. During seven weeks students may repeat the course and take the exam thus allowing them to remain in their planned curriculum without losing more time. The peers were impressed by this additional arrangement to the benefit of the students although, naturally, not all courses can be offered. Only if teachers volunteer to offer a summer course for extra payment these can be taken by the students. The only critical point related to the exam organisation was mentioned by the students who complained that in some cases, the distribution of exams is problematic. While there are two weeks reserved for exams it can happen that five exams have to be taken within one week while only one remains for the second. Although the peers understand that it can be complicated in special situations to have an equal distribution for all students, they recommend checking the distribution mechanisms in order to avoid such peaks of student workload during the exam periods.

Major objects of concern identified by the peers were the graduate projects, especially in Electrical and Communication Engineering and Management Information Systems. In MIS the peers understood that the quality of the works which were reviewed did hardly meet the standard aimed for by the programme co-ordinators. As outlined before, the graduation project is limited to one semester and is valued only at 8 ECTS-credits. The peers support the department's initiative to expand the project to two semesters, increase the workload and thus raise the quality level. Nonetheless, in ECE they were surprised to see that the works presented were not of the standard they expected after looking at the curriculum and seeing the laboratories. They do not at all question the quality level of teaching or the outstanding qualification of the teaching staff. However, the works re-

viewed were of a merely descriptive nature lacking a critical analysis of literature as well as of results achieved during the experiments described. Consequently, the peers deem it necessary that the level of challenge and independent analytical thinking in the graduate projects needs to be continually enhanced in order to comply with the EQF-Level 6.

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

The peers are happy to hear that the aspect of oral exams will be discussed within the Faculty of Engineering and the School of Applied Sciences. With regards to the graduate projects they have partly already been discussed above under criterion 1.3. In the case of ECE the peers acknowledge that the issue has already been discussed by the coordinators and that several options have been presented. Possible steps would be to compile a list of acceptable topics approved by the department. Additionally the project proposals developed by the students in the first part of the project could be collected at an early stage and be discussed with the students to avoid too generic approaches. The peers consider these options laudable and await the eventual developments designed by the Faculty. Thus, the peers consider this criterion to be partly fulfilled.

4. Resources

Criterion 4.1 Staff

Evidence:

- Self-Assessment Reports include Student-Teacher-Ratio, Academic staff, Equipment and Financial Resources
- On-site-visit
- Audit discussions

Preliminary assessment and analysis of the peers:

Along with the information in the SAR the HEI presented detailed staff handbooks for all study programmes. On this basis, the peers were convinced that the number of staff assigned to the programmes was sufficient to properly sustain the degree programmes. The average ratio of students to teachers appeared to be excellent (16:1 in ECE, 7:1 in MIS and 12:1 in Software Engineering). All teachers are of outstanding qualification, most of them have international degrees and excellent English. At the same time, the peers noted that the number of publications is remarkable, notwithstanding the substantial teaching

load. In the discussion with the staff, the panel learned that the teaching staff feels very well supported by the University, teaching reductions can be obtained for research projects and bonuses are paid for the publication of articles. In summary, the panel had no doubt about the qualification and the sufficient quantity of the staff for all three programmes.

Criterion 4.2 Staff development

Evidence:

- Self-Assessment Reports include Student-Teacher-Ratio, Academic staff, Equipment and Financial Resources
- On-site-visit
- Audit discussions

Preliminary assessment and analysis of the peers:

As mentioned above, the staff feels well supported by the University in terms of research as well as individual development. The point of sabbaticals was controversially discussed but it became clear that apart from available possibilities most staff members are not too keen about the idea. In general, the possibility does exist but it would not be paid for. On the other hand, several offers are made by the University for teachers to go abroad during the holidays or to attend conferences. While the panel is convinced that a broad variety of options is available to the staff they encourage the University to think about alternative models allowing staff members to take a whole semester off for research which would not necessarily imply leaving neither the country nor the university.

Criterion 4.3 Funds and equipment

Evidence:

- Self-Assessment Reports include Student-Teacher-Ratio, Academic staff, Equipment and Financial Resources
- On-site-visit
- Audit discussions

Preliminary assessment and analysis of the peers:

The peers found that the funding and the equipment of the University as a whole but especially of the three programmes under review are excellent. From the staff members they learned that missing books or equipment can easily be applied for without bureaucratic obstacles. During the tour on the premises it became obvious that most buildings are new, laboratories are well-equipped and designed to fit the needs of disabled persons. Analysing the equipment, the panel remarked that it was absolutely fitting the needs of Bachelor programmes but that there is still some room for improvement in certain areas. Concerning the specializations offered and, in case, deepened in any Master programme it would be helpful for the Department to have a plan of continuous improvement since most laboratories are quite new and may still be expanded in the next years.

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

The peers consider this criterion to be completely fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions
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Evidence:

- Module handbooks for all study programmes presented with the Self-Assessment Report

Preliminary assessment and analysis of the peers:

The peers appreciated the module descriptions presented beforehand with the self-assessment report. From the documentation and during the discussion with teaching staff and students they made certain that a complete description for each module is available to the students through an eLearning-platform thus ensuring that all students have sufficient information about the courses and their contents in advance.

The panel found the module descriptions in general to be in very good order although there is still some room for improvement. Not all descriptions are as detailed as they should be, especially in the elective courses of the Bachelor Electrical and Communication Engineering. The peers remarked that for example in the module “EE321: Satellite Communications” the description of the content is very generic and might be reviewed. This should also be seen in the context of the aforementioned assessment regarding the re-

petitiveness in the content of the ECE electives that should be avoided by designing certain roadmaps for the students. Consequently, a more precise description of content and learning outcomes could also help to define the students' specializations. Most importantly, the peers emphasized that the module descriptions should indicate the distribution of working hours which is the basis for the calculation of the ECTS-credits. Hence, the students should be able to retrace how many hours of the total workload should be dedicated to classes, lab work and private study. Additionally, it needs to be ensured that all modules that form part of the curricula do also have a module description which is not yet the case with the 30-day work practice. As outlined before, the practice is part of the curriculum; therefore, it needs to be credited accordingly and also has to have a module description. Apart from these issues, the descriptions offer sufficient information about the learning outcomes of the courses, the module responsible, recommended literature and the required examinations.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Exemplary Diploma Supplement for each degree programme

Preliminary assessment and analysis of the peers:

Along with the self-assessment report the HEI presented exemplary Diploma Supplements for each degree programme covering all required information about the programme contents, the curricula, the calculation of the final grade and the Northern Cypriot system of higher education. The only aspect missing was the indication of a relative grade that will allow for the classification of the individual grade in the context of the study cohort. The peers ask the HEI to add such a relative grade to the Diploma Supplement.

Criterion 5.3 Relevant rules

Evidence:

- Regulations for examination, admission, etc. are added to the Self-Assessment Report

Preliminary assessment and analysis of the peers:

The peers realized that regulations for all important aspects of student life and the respective degree programmes have been issued by the HEI and are accessible to the students via an online platform. During the discussion with the students, they made sure that all participants knew perfectly well where to find any regulations, whom to contact, what are their rights and their duties. Nevertheless, the peers could not find these regulations online, which might be helpful to further increase the HEI's transparency and make decisions easier for those who are interested in studying at the European University of Lefke. Similarly, no information about the teaching staff is available on the website. There is only a list of names which is not very helpful for those interested in the degree programmes, especially since most of the future students are not based in Northern Cyprus. To enhance the programmes' visibility it would therefore be recommendable to add short descriptions of teachers and their research work to the website.

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

Concerning the module descriptions the peers understand that the HEI will work on this issue. Until then the criticism remains. Regarding the relative grade indicated on the Diploma Supplement it is acknowledged that the HEI has established a way of calculating such a grade. An example has been provided in the aftermath of the on-site-visit to the satisfaction of the peers. Hence, the peers consider this criterion to be predominantly fulfilled.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Samples of questionnaires for Industry partners, graduates, students, course evaluations and course-learning-outcomes are part of the self-assessment report

Preliminary assessment and analysis of the peers:

The quality management at the EUL and the reviewed degree programmes was scrutinized by the peers and considered to be manifold, well-organized and effective. It was

understood that a continuous evaluation by the students as well as the graduates is essential for the programme co-ordinators and the rector. Since most students return to their home countries after the completion of their studies, the HEI collects private data such as E-Mail addresses in advance in order to be able to stay in contact for graduate evaluations. At the same time, students evaluate the programme at several stages of their studies, industry representatives are frequently asked for their opinion of the qualification of programme graduates and, of course, all courses are being evaluated by the students. The peers especially welcomed the fact that not only the course itself is evaluated but also the course learning outcomes which allows for an on-going revision of contents and the counter-check if the learning outcomes aimed at are really being achieved by the students. As part of the course evaluation the workload of the students is also assessed and, if necessary, modified. In the discussion with the students, the panel got the impression that the students were content with the degree to which they are involved in the quality management process and that the criticism they express in the evaluations leads to a constant improvement of the programmes. The peers asked if the results of evaluations are discussed with the students but apparently this is not yet the case. Instead, it was explained that the issue has already been raised. In future evaluations a discussion about the results will take place in the courses at an earlier time of the semester thus allowing for an immediate feedback to the class which was hitherto not possible. Nevertheless, the peers could see that evaluation results are made public on the intranet and can be commented by the students. Thus, they were positive that the quality management at EUL is adequate and aiming at an on-going improvement of the programmes.

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

The peers consider this criterion to be completely fulfilled.

D Additional Documents

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

No additional documents needed

E Comment of the Higher Education Institution (22.08.2017)

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

- Curriculum update Management Information Systems
- Module descriptions for the Graduation project in Management Information Systems
- Exemplary calculation of relative grades

F Summary: Peer recommendations (10.09.2017)

The peers recommend the award of labels as follows:

Degree Programme	ASIIN-Label	Subject-Specific Label	Accreditation until max.
Ba Electronics and Communication Engineering	With requirements	EUR-ACE®	30.09.2022
Ba Software Engineering	With requirements	Euro-Inf®	30.09.2022
Ba Management Information Systems	With requirements	Euro-Inf® (after fulfilment of requirement 3)	30.09.2022

Requirements for all degree programmes

- A 1. (ASIIN 1.3/5.1) The summer training/work practice must be included in the module handbook and be graded with credits according to the workload.
- A 2. (ASIIN 5.1) For all courses, rewrite the module descriptions so as to include uniformly all information about the course contents and the distribution of the workload on which the calculation of ECTS-credits is based. Additionally, it must be unambiguously stated how many student working hours are assigned to one ECTS-credit.

Requirement for ECE and MIS

- A 3. (ASIIN 3) Provide a roadmap concerning how the level of challenge and independent analytical thinking in the graduate projects, including scientific analysis, and discussion based on the research exercise(s) will be raised.

Requirement for ECE

- A 4. (ASIIN 1.3) Provide examples/choices of study plans indicating several possible specializations in the elective courses, thus avoiding unnecessary repetitions.

Recommendations

- E 1. (ASIIN 3) It is recommended to introduce oral exams instead of written exams in modules where this might be reasonable in order to enhance the students' skills in conducting presentations.
- E 2. (ASIIN 3) It is recommended to evenly distribute the exams during the final exam periods so as to avoid any concentration of exams.
- E 3. (ASIIN 5.3) It is recommended to present examination regulations as well as staff-CV's on the website in order to enhance the transparency as well as the programmes' international visibility.

G Comment of the Technical Committees

Technical Committee 02 – Electrical Engineering (20.09.2017)

Analysis and Assessment

The Technical Committee proposes a slight modification of requirement 4 (study specializations) in order to more clearly indicate that this requirement is not so much about avoiding unintentional repetitions through the selection of elective courses, but about the indication of a number of meaningful combinations of electives (which occasionally might even overlap to a certain degree). Regarding recommendation 3 (international visibility) the Technical Committee suggests a more general reference to the information about the teaching staff as a means to enhance the international visibility of the study programmes. Additionally, it proposes minor editorial modifications in the wording of requirement 2 (module descriptions) and recommendation 2 (examinations).

Otherwise, the Technical Committee agrees with the assessment and recommended resolution of the peers.

Analysis and Assessment for the Award of the EUR-ACE Label

The Technical Committee concludes that the intended learning outcomes of the Electronics and Communication Engineering programme do correspond with the engineering-related parts of its Subject-Specific Criteria.

The Technical Committee recommends the award of the seals as follows:

Degree Programmes	ASIIN-Label	Subject-Specific Label	Accreditation until max.
Ba Electronics and Communication Engineering	With requirements	EUR-ACE®	30.09.2022
Ba Software Engineering	With requirements	Euro-Inf®	30.09.2022
Ba Management Information Systems	With requirements	Euro-Inf® (after fulfilment of requirement 3)	30.09.2022

Requirements for all degree programmes

- A 1. (ASIIN 1.3/5.1) The summer training/work practice must be included in the module handbook and be graded with credits according to the workload.
- A 2. (ASIIN 5.1) For all courses, rewrite the module descriptions so as to include ~~uniformly~~ all information about the course contents and the distribution of the workload on which the calculation of ECTS-credits is based. Additionally, it must be unambiguously stated how many student working hours are assigned to one ECTS-credit.

Requirement for ECE and MIS

- A 3. (ASIIN 3) Provide a roadmap concerning how the level of challenge and independent analytical thinking in the graduate projects, including scientific analysis, and discussion based on the research exercise(s) will be raised.

Requirement for ECE

- A 4. (ASIIN 1.3) Provide ~~examples/choices~~ exemplary of study plans indicating ~~several possible~~ meaningful specializations in the elective courses, ~~thus avoiding unnecessary repetitions.~~

Recommendations

- E 1. (ASIIN 3) It is recommended to introduce oral exams instead of written exams in modules where this might be reasonable in order to enhance the students' skills in conducting presentations.

- E 2. (ASIIN 3) It is recommended to more evenly distribute the exams during the final exam periods so as to avoid any concentration of exams.
- E 3. (ASIIN 5.3) It is recommended to present examination regulations as well as ~~staff-~~
~~CV's~~ information about the lecturers on the website in order to enhance the transparency as well as the programmes' international visibility.

Technical Committee 04 – Informatics (20.09.2017)

Analysis and Assessment concerning the award of the ASIIN Label:

The TC discusses the procedure and agrees mostly with the peers except for minor changes. However, in the case of Requirement 3 the TC proposes a different wording in order to detail the modifications expected from the HEI.

Analysis and Assessment concerning the award of the EUR-ACE® Label:

The TC agrees with the assessment of the peers that the learning outcomes of the programme correspond with the Subject-Specific Criteria of the TC 02 – Electrical Engineering.

Analysis and Assessment concerning the award of the Euro-Inf® Label:

The TC concludes that until Requirement 3 is not fulfilled the degree programmes are not totally in line with the Euro-Inf-Criteria. The label can thus only be awarded after the fulfilment of the requirement.

The Technical Committee 04 – Informatics recommends the award of labels for the degree programmes as follows:

Degree Programme	ASIIN-Label	Subject-Specific Label	Accreditation until max.
Ba Electronics and Communication Engineering	With requirements	EUR-ACE®	30.09.2022
Ba Software Engineering	With requirements	Euro-Inf®	30.09.2022

Degree Programme	ASIIN-Label	Subject-Specific Label	Accreditation until max.
Ba Management Information Systems	With requirements	Euro-Inf® (after fulfilment of requirement 3	30.09.2022

Requirements for all degree programmes

- A 1. (ASIIN 1.3/5.1) The summer training/work practice must be included in the module handbook and be graded with credits according to the workload.
- A 2. (ASIIN 5.1) For all courses, rewrite the module descriptions so as to include uniformly all information about the course contents and the distribution of the workload on which the calculation of ECTS-credits is based. ~~Additionally, it must be unambiguously stated how many student working hours are assigned to one ECTS credit.~~ (Vorschlag FA 04)

Requirement for ECE and MIS

- A 3. (ASIIN 3) Adjust the curricula in order to raise ~~Provide a roadmap concerning how~~ the level of challenge and independent analytical thinking in the graduate projects, including scientific analysis, and discussion based on the research exercise(s) ~~will be raised.~~ (Vorschlag FA 04)

Requirement for ECE

- A 4. (ASIIN 1.3) Provide examples/choices of study plans indicating several possible specializations in the elective courses, thus avoiding ~~unnecessary~~ (Vorschlag FA 04: content) repetitions.

Recommendations

- E 1. (ASIIN 3) It is recommended to introduce oral exams instead of written exams in modules where this ~~might be~~ (Vorschlag FA 04: is) reasonable in order to enhance the students' skills in conducting presentations.
- E 2. (ASIIN 3) It is recommended to evenly distribute the exams during the final exam periods so as to avoid any concentration of exams.

- E 3. (ASIIN 5.3) It is recommended to present examination regulations ~~as well as staff-CVs~~ on the website in order to enhance the programmes' transparency ~~as well as the programmes' international visibility~~. (Vorschlag FA 04)

H Decision of the Accreditation Committee (29.09.2017)

Analysis and Assessment for the award of the ASIIN label:

The Committee discusses the procedure and concludes that in Requirement 2 the original formulation should be maintained while the last sentence is not necessary and can be left out. In the case of requirement 3 the Committee decides to modify the formulation disagreeing with the recommendation of TC 04, thus leaving more space for the HEI to develop solutions. Concerning requirement 4 the members follow the recommendation of TC 02 to delete the last part of the sentence. With the recommendations the suggestions of the Technical Committees are widely followed, in the case of recommendation 3 the Committee maintains the original formulation but deleting the reference to the Staff-CVs.

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

The Accreditation Committee concludes that the intended learning outcomes of the Electronics and Communication Engineering programme do correspond with the engineering-related parts of its Subject-Specific Criteria.

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

The Accreditation Committee concludes that the intended learning outcomes of the Software Engineering programmes do correspond with the Subject-Specific Criteria of the Technical Committee. In the case of the Ba Management Information Systems the award of the label must be delayed until the requirement 3 with reference to the Subject-Specific Criteria is fulfilled.

The Accreditation Committee decides the award of labels as follows:

Degree Programme	ASIIN-Label	Subject-specific labels	Accreditation until max.
Ba Electronics and Communication Engineering	With requirements	EUR-ACE®	30.09.2022
Ba Software Engineering	With requirements	Euro-Inf®	30.09.2022
Ba Management Information Systems	With requirements	Euro-Inf® (after fulfilment of requirement 3)	30.09.2022

Requirements for all degree programmes

- A 1. (ASIIN 1.3/5.1) The summer training/work practice must be included in the module handbook and be graded with credits according to the workload.
- A 2. (ASIIN 5.1) For all courses, rewrite the module descriptions so as to include uniformly all information about the course contents and the distribution of the workload on which the calculation of ECTS-credits is based.

Requirement for ECE and MIS

- A 3. (ASIIN 3) Demonstrate how the level of challenge and independent analytical thinking in the graduate projects, including scientific analysis, and discussion based on the research exercise(s) will be raised.

Requirement for ECE

- A 4. (ASIIN 1.3) Provide exemplary study plans indicating meaningful specializations in the elective courses.

Recommendations

- E 1. (ASIIN 3) It is recommended to introduce oral exams instead of written exams in modules where this is reasonable in order to enhance the students' skills in conducting presentations.
- E 2. (ASIIN 3) It is recommended to more evenly distribute the exams during the final exam periods so as to avoid any concentration of exams.

- E 3. (ASIIN 5.3) It is recommended to present examination regulations on the website in order to enhance the programmes' transparency.

Appendix: Programme Learning Outcomes and Curricula

According to the Self-Assessment-Report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Electronic and Communication Engineering:

“According to the vision and mission of the department, an intended qualifications profile has been established which has been summarized in educational objectives and defined in eleven program outcomes. The intended qualifications profile allows the students to take up an occupation corresponding to their qualification. The competence profile has followed on from the Electrical and Electronics Engineering Department, which has previously been accredited by MÜDEK, with emphasis on the topics in the Electronic and Communication Industry. This includes the topics where there is major on-going research. These program outcomes are also published online in the university website for ease of access.

ECE educational objectives can be summarized as follows:

EO1: Graduates actively start and improve their professional careers in their field or in a multi-disciplinary area in international organizations/institutions.

EO2: Graduates are able to continue on to postgraduate studies and take part in research and development in a related field.

EO3: Graduates are capable of self-motivation and self-improvement, consequently who are actively involved in various certificate programs, courses or symposia.

EO4: Graduates have leadership and team-working abilities and are able to excel through their peers and become entrepreneurs.

The program outcomes for the ECE Department can be summarized in 11 points as follows:

PO1: To have gained broad and sound knowledge in mathematics, natural sciences and engineering including complex phenomena related to Electronics and Communications, enabling them to apply this knowledge to engineering problems.

PO2: The ability to apply the obtained broad Engineering knowledge in disciplinary or multidisciplinary contexts, in either individual or team setting.

PO3: To have gained the ability to simulate and experimentally validate, gather data, analyse, critique, document and present results in the area of Electronic and Communication Engineering.

PO4: To be able to research technical literature, and other sources of information relating given problems, and effectively communicate, both verbally and in writing, whilst working on projects and in professional venues.

PO5: To have gained the ability to recognise, identify, formulate and solve complex engineering problems by selecting and applying the appropriate analysis and modelling tools, whilst being aware of the limits of the applied methods and materials.

PO6: To have knowledge of project management and risk management methods, awareness about entrepreneurship, inventiveness and sustainable improvement in the area of Electronic and Communication Engineering.

PO7: The ability to design a complex system, electrical/electronic circuit, communication system, process or product according to given specifications, via consultation of norms, guidelines and safety regulations, considering criteria and conditions such as economics, environmental problems, sustainability, manufacturability, ethics, health, safety, socio-political problems and the ability to apply modern design methods to achieve the above.

PO8: To be aware of the professional and ethical responsibilities imparted on the intended engineering applications.

PO9: The ability to access information with the knowledge of the necessity of life-long-learning, to self-improve and to follow the latest innovations in science and technology.

PO10: The ability to develop, choose and apply the modern techniques and tools, in the applications of Electronic and Communication Engineering, to effectively use information technologies.

PO11: To have knowledge and awareness about the problems of the era, the universal and communal impact of Electronic and Communication Engineering applications on health, environment and safety.”

The following **curriculum** is presented:

	Course Code	Course Name	UE	NS	UC	AC	TE
SEMESTER 1	MATH101	Calculus 1		4			
	PHYS103	Physics 1		4			
	ENGL121	English 1			3		
	COMP117	Computing Foundations		4			
	MATH109	Linear Algebra		3			
	ECE119	Introduction to Profession				0	
SEMESTER 2	MATH110	Calculus 2		4			
	PHYS104	Physics 2		4			
	ENGL122	English 2			3		
	COMP124	Computer Programming		4			
	CHEM104	Chemistry		4			
	TURK210/HIST200	Turkish/History			0		
SEMESTER 3	MATH201	Ord. Differential Equations		4			
	ECE203	Digital Circuits				3	
	ECE205	Circuit Theory 1				4	
	ECE227	Electrical Materials				3	
	EULxx1	University Elective 1	3				
	HIST100/TURK200	History /Turkish			2		
SEMESTER 4	MATH226	Prob. And Statistical Methods		3			
	MATH224	Engineering Maths.		3			
	ECE216	Circuit Theory 2				4	
	ECE204	Electronics 1				4	
	ECE214	Electromagnetic Theory 1				3	
	EULxx2	University Elective 1	3				
SEMESTER 5	EE317	Signals and Systems				3	
	ECE317	Electromagnetic Theory 2				3	
	ECE311	Electronics 2				4	
	COMP333	Comp. Architecture and Org.				4	
	ECExx1	Technical Elective 1					3
SEMESTER 6	ECE308	Microprocessor Systems				4	
	ENGL330	Technical Writing			3		
	ECE312	Communication Systems 1				3	
	EE322	Control Systems				3	
	ECExx2	Technical Elective 2					3
	ECExx3	Technical Elective 3					3
	ECE409	Graduation Project I				0	

SEMESTER 7	ECON413	Engineering Economics				3	
	ENGG437	Entrepreneurship and Leadership				3	
	ECE403	Digital Communications				3	
	ECE4xx4	Technical Elective 4					3
	ECE4xx5	Technical Elective 5					3
	ECE310	Summer Training				0	
SEMESTER 7	ECE420	Graduation Project II				3	
	ENGG434	Engineering Ethics				3	
	ECE408	Digital Signal Processing				3	
	ECE4xx6	Technical Elective 6					3
	ECE4xx7	Technical Elective 7					3
		Total	6	41	11	63	21
		Percentage %:	4%	29%	8%	44%	15%

According to the Self-Assessment-Report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Software Engineering:

“Software Engineering Educational Objectives:

EO1: To be practicing software engineers who demonstrate an ability to design and develop software in a professional manner, making use of software engineering knowledge, appropriate tools and practices.

EO2: To strive to meet the specific needs of industry and/or academia, able to contribute effectively in research and development, as part of a team and on an individual basis.

EO3: To be aware of the need for lifelong-learning and personal and professional growth in a computing world that is continually changing whilst possessing ethical consciousness and global awareness.

EO4: To work towards demonstrating leadership and entrepreneurship in their profession.

Software Engineering Programme Outcomes:

PO1: Acquires and demonstrates an ability to use and apply knowledge of mathematics, natural sciences and computing related to software engineering.

PO2: Understands the core concepts in computer science, including current programming methodologies, the analysis of algorithms and data structures, and the study of operating systems, database management systems and computer networks.

PO3: Able to analyse real-world problems and define the software requirements appropriate to software engineering to meet desired needs within realistic constraints.

PO4: Able to learn and apply design principals, methods, skills, using current tools and techniques necessary for efficient and effective software engineering practice.

PO5: Capable of identifying and sharing information and knowledge, whilst collaborating effectively, as part of a multidisciplinary team in order to set and meet project goals.

PO6: Capable of thinking critically, clearly identifying and using the necessary information for effective decision making in a rapidly changing environment.

PO7: Able to communicate ideas and concepts effectively, verbally and in writing, to both experts and non-technical people.

PO8: Understands the software lifecycle, from system requirements, analysis and specification, to implementation, testing, validation and maintenance.

PO9: Appreciates the economic, business, judicial, ethical, global, environmental and societal impacts of software engineering, and is aware of the need for commitment to professional and individual development.

PO10: Understands the processes involved in the delivery and management of information systems within commercial settings.”

0 Appendix: Programme Learning Outcomes and Curricula

The following **curriculum** is presented:

		Module	Course Title	NS	UC	UE	AC	TE	Total
YEAR 1	Semester - 1	MATH101	Calculus I	4					4
		PHYS103	Physics I	4					4
		ENGL121	English I		3				3
		COMP117	Computing Foundations				4		4
		MATH109	Linear Algebra	3					3
	COMP119	Introduction to Profession				0		0	
	Semester - 2	MATH110	Calculus II	4					4
		PHYS104	Physics II	4					4
		ENGL122	English II		3				3
		COMP124	Computer Programming				4		4
CHEM104		Chemistry	4					4	
HIST100/TURK200	History of Turkish Reforms/Turkish		2				2		
YEAR 2	Semester - 3	MATH201	Ordinary Differential Equations	4					4
		COMP217	Data Structures				4		4
		SENG201	Intro. to Software Engineering				3		3
		SENG211	Intro. to Computer Organisation				3		3
		EULxx1	University Elective I			3			3
	Semester - 4	MATH224	Engineering Maths	3					3
		MATH226	Probability & Statistical Methods	3					3
		COMP214	Operating Systems				3		3
		COMP218	Object-Oriented Programming				4		4
		SENG208	System Analysis & Design				3		3
EULxx2	University Elective II			3			3		
YEAR 3	Semester - 5	COMP335	Analysis of Algorithms				3		3
		COMP337	Database Management Systems				4		4
		COMP339	Systems Programming				3		3
		SENG303	Sw. Req. Analysis & Specifications				3		3
		SENG308	Sw. Quality Assurance & Testing				3		3
	Semester - 6	COMP342	Computer Networks				3		3
		COMP364	Principles of Prog. Languages				4		4
		ENGL330	Tech. Writing & Presentation Skills		3				3
		SENG310	Software Design & Architecture				3		3
		SENG312	Human Computer Interaction				3		3
TURK210/HIST210	Turkish/History of Turkish Reforms		0				0		
YEAR 4	Semester - 7	SENG400	Graduation Project - Part I				1		
		ECON413	Engineering Economics				3		
		ENGG437	Entrepreneurship & Leadership				3		
		SENG407	Sw. Project Management				3		
		COMPxx1	Technical Elective I					3	
	COMPxx2	Technical Elective II					3		
	SENG360	Summer Training				0			
	Semester - 8	SENG450	Graduation Project - Part II				3		
		ENGG434	Engineering Ethics				3		
		COMPxx3	Technical Elective III					3	
COMPxx4		Technical Elective IV					3		
COMPxx5		Technical Elective V					3		
Credit Totals :				33	11	6	73	15	138
Percentages :				23.9%	8.0%	4.3%	52.9%	10.9%	100%

According to the Self-Assessment-Report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Management Information Programme:

“The educational objectives of the applicant degree programme are as follows:

EO1: Be capable of practicing information technology (IT) and successfully participate in both national and international organisations within the field of IT in a professional manner.

EO2: Participate successfully in research and development areas in national and international universities / industry.

EO3: Become entrepreneurs and/or acquire leadership skills (project management, team leadership, company directorship and/or management) in the areas of computing, software, information systems and the IT industry.

EO4: Take part in the projects of various fields, working as part of a team or independently.

In this respect, students graduating from the Department of MIS will be expected to:

PO1: Have effective verbal and written communication skills in the field of Information Technology (IT).

PO2: Have the scientific foundations necessary for managing and maintaining information systems; in particular, an ability to apply knowledge of computing, logic and mathematics where necessary when solving problems.

PO3: Have the ability to identify, analyse, make decisions, apply strategies and implement solutions in complex management related problems.

PO4: Have the fundamental knowledge regarding technical concepts and practices in IT when working with key information systems, such as operating systems, database systems, communication systems and networks.

PO5: Have an acute awareness of the need for continued professional development with a view to life-long learning; conduct research where necessary, applying modern techniques while following developments in the Informatics industry.

PO6: Have an awareness of current-day problems, and an understanding of professional, ethical, legal, security and social issues.

PO7: Be able to work and manage in interdisciplinary research and development projects as an individual and/or as a member of a team, and be equipped with the theoretical background to pursue graduate level studies.”

The following **curriculum** is presented:

AC: Area Core, TE: Technical Elective, M: Mathematics, UC: University Core						
	Course Code	Course Name	Credits			
			AC	TE	M	UC
Year 1	ECON 101	Principles of Microeconomics	3			
	MIS 107	Introduction to Programming	3			
	MIS 109	Information Technology	3			
	MATH 107	Maths for Business & Economics I			3	
	ENGL 121	English I				3
	MATH 119	Discrete Mathematics			3	
	ECON 102	Principles of Macroeconomics	3			
	MIS 124	Computer Programming	4			
	POLS 104	Introduction to Law	3			
	MATH 108	Maths for Business & Economics II			3	
	ENGL 122	English II				3
	TURK100/200	Turkish				2
Year 2	BUSN 203	Business Law and Ethics	3			
	BUSN 205	Principles of Management	3			
	MARK 203	Principles of Marketing	3			
	ACCT 201	Financial Accounting I	3			
	STAT 203	Statistics I			3	
	MIS 209	Visual Programming	3			
	MIS 206	System Analysis and Design	3			
	MIS 214	Principles of Operating Systems	3			
	MIS 208	Data Analysis	3			
	ACCT 202	Financial Accounting II	3			
	STAT 204	Statistics II			3	
	HIST 100/200	History of Turkish Reforms/History of Turkey & Cyprus				2
Year 3	MIS 303	Management Information Systems	3			
	MIS 305	Data Communications and Computer Networks	3			
	MIS 329	Computer System Programming	3			
	MIS 337	Database Management Systems	4			
	TE-1	Technical Elective 1		3		
	MIS 302	Internet Information Systems	3			
	MIS 306	Human Factors in Computing	3			
	MIS 304	Network Security	3			
	MIS 308	Database Management II	3			
	TE-2	Technical Elective II		3		
Year 4	BUSN 411	Strategic Management	3			
	MIS 401	Information Systems Development	3			
	MIS 403	Database Security	3			
	SENG 407	Software Project Management	3			
	MIS 400	Summer Training	1			

0 Appendix: Programme Learning Outcomes and Curricula

TE-3	Technical Elective III		3		
MIS 402	Strategic Information Systems	3			
MIS 404	Legal and Ethical Issues in Computing	3			
TE-4	Technical Elective IV		3		
TE-5	Technical Elective V		3		
MIS 420	Graduation Project	3			
Total:		93	15	15	10
%		69,92	11,27	11,27	7,51