ASIIN Accreditation Report

Bachelor's Degree Programmes
Computer Science and Information
Physics
Mathematics

Provided by
Majmaah University, College of Science (Saudi Arabia; male campus in Al-Zulfi)

Version: 01 July 2016

Table of Content

A About the Accreditation Process

Title of the degree Programme	Labels applied for [1]	Previous accreditation	Involved Technical Committees (TC)[2]
Ba Computer Science and Information	ASIIN	n/a	04
Ba Mathematics	ASIIN	n/a	12
Ba Physics	ASIIN	n/a	13
Date of the contract: 24.09.2013 **Submission of the final version of the self-assessment report:** 24.09.2014 **Date of the onsite visit:** 04./05.03.2015 **at:** male campus in Al-Zulfi (Saudi Arabia)			
Peer panel: Prof. Dr. Klaus Behler, University of Applied Sciences Mittelhessen; Prof. Dr. Guenter M. Gramlich, Ulm University of Applied Sciences; Prof. Dr. Ruediger Reischuk, Luebeck University; Dipl.-Ing. Juergen F. Schaldach, formerly T-Systems GEI GmbH; Prof. Dr. Rudolf Schmitz, RWTH Aachen University			
Representative of the ASIIN headquarter: Dr. Siegfried Hermes			
Responsible decision-making committee: Accreditation Committee for Degree Programmes			

[1] ASIIN Seal for degree programmes

[2] TC: Technical Committee for the following subject areas: TC 04 – Informatics/Computer Science); TC 12 – Mathematics; TC 13 – Physics.

Criteria used:

European Standards and Guidelines as of 10.05.2005

ASIIN General Criteria, as of 28.06.2012

Subject-Specific Criteria of Technical Committee 04 – Informatics, 12 – Mathematics, 13 – Physics, as of 09.12.2011

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

B Characteristics of the Degree Programmes

a) Name & Final Degree	b) Areas of Specialization	c) Mode of Study	d) Duration & Credit Points	e) First time of offer & Intake rhythm	f) Number of students per intake	g) Fees
Computer Science and Information / B.Sc.	- Computer Graphics and Multimedia - Computer Networks - Individual Track	Full time	10 semester 161 credit hours	fall semester	150 p.a.	no fees
Physics / B.Sc.	n/a	Full time	8 semester 137 credit hours	fall semester	110 p.a.	no fees
Mathematics / B.Sc.	n/a	Full time	8 semester 137 credit hours	fall semester	150 p.a.	no fees

For the Bachelor's degree programme Computer Science and Information, the self-assessment report states the following **intended learning outcomes**:

Knowledge

- Acquire knowledge of computing and mathematics appropriate to the discipline including simulation and modeling.
- Recognize the need for and an ability to engage in continuing professional development.
- Understand best practices and standards and their application.

Cognitive Skills

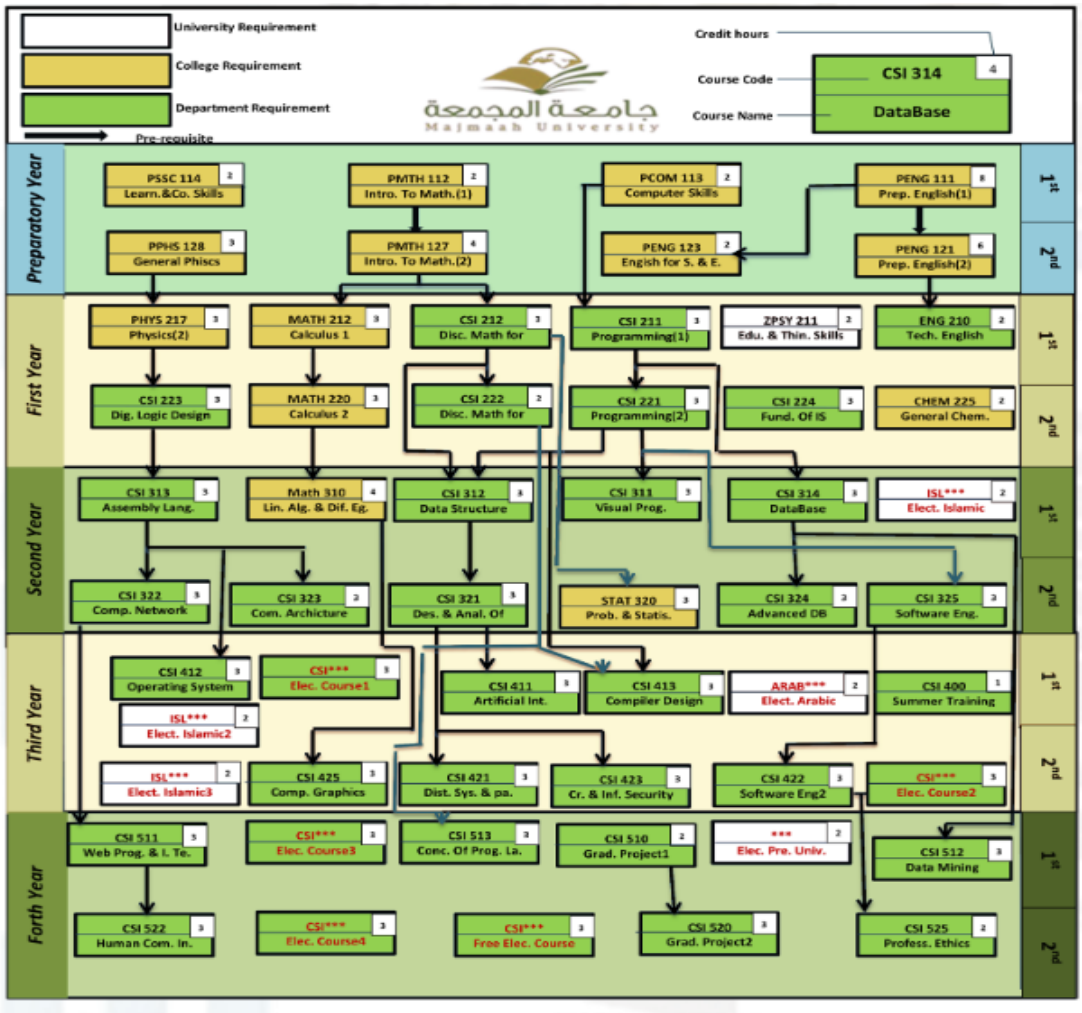
- Analyze a problem to identify and define the computing requirements appropriate for its solution.
- Design, implement, develop and evaluate complicated computer – based system, process component, or program to meet desired needs.
- Use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, web systems and technologies.

- Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer – based systems.
- Integrate IT – based solutions into the user environment effectively.

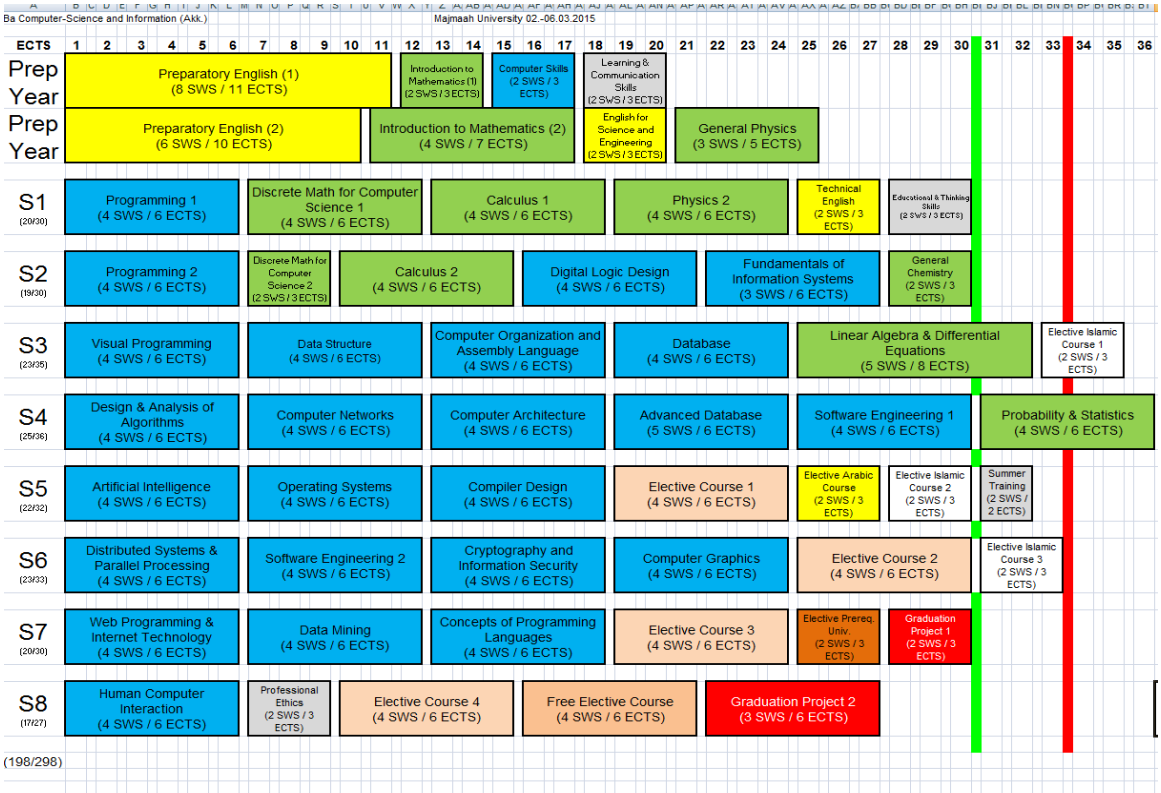
Interpersonal Skills and Responsibility

- Adhere professional, ethical, legal, security, and social issues and their responsibilities.
- Analyze the local and global impact of computing on individuals, organization, and society.
- Use current techniques, skills, and tools necessary for computing practice.
- Function effectively on teams to accomplish a common goal.
- Communicate effectively with a range of audiences.

The following **curriculum** is presented:



This translates into the following graphical illustration of the HEI's conversion of credit hours into ECTS points (conversion of Saudi Arabian credit hours into ECTS credit points according to the declaration of the university; "SWS" comprising lectures, labs, exercises/tutorials):



For the Bachelor's degree programme Physics, the self-assessment report states the following **intended learning outcomes**:

- Recognize the knowledge of fundamental concepts in Classical physics (mechanics, electrodynamics, thermodynamics, vibrations, waves and optics) and modern physics (quantum, atomic and molecular, nuclear, elementary particle and solid state physics)
- Recall the appropriate mathematical tools used in physics
- Understand the importance of physics laws and its limitations their inherent relation and mathematical formulation
- Perform experiments, data acquisition, data analysis and draw results and conclusions.
- Develop the skill for analyzing/solving the physics based problems.

- Explain to general audience the physical principles that underlie our understanding of nature.
- Communicate and work effectively in groups as well as individually
- Be aware of professional and ethical responsibilities
- Think creatively about scientific problems and their solutions, both orally and in written.
- Locate and retrieve scientific information, using modern computer tools.
- Learn how to collect and classify the required topics using internet communication tools.

The following **curriculum** is presented:

Prep Year					
1st semester	**PCOM 113**	Computer Skills	**Required**	(2+0+0) 2	Computer Science
	PMTH 112	Introduction to mathematics 1		(2+0+0) 2	Mathematic
	PENG 111	English 1 for prep. year		(2+6+0) 8	
	PSSC 114	Learning and communication skills		(2+0+0) 2	
2nd semester	**PMTH 127**	Introduction to mathematics 2	**Required**	(3+0+1) 4	Mathematic
	PENG 123	English for engineering and science		(2+0+0) 2	
	PPHS 128	Physics		(2+2+0) 3	Physics
	PENG 112	**English 2 for prep. year**		(2+4+0) 6	
Year	**Course Code**	**Course Title**	**Required or Elective**	**Credit Hours**	**College or Department**
Third Level					
1st semester	**IC 101**	**Introduction to Islamic culture**	**Required**	(2+0+0) 2	
	MATH 201	**Calculus 1**		(3+0+0) 3	Mathematic
	PHYS 201	**General Physics 1**		(3+2+0) 4	Physics
	ARAB 101	**Linguistic Skills**		(2+0+0) 2	
	ZPSY 101	**Thinking skills and learning methods.**		(2+0+0) 2	
	-----	**Free course**	**Free**	(3+0+0) 3	
	-----	**University elective course**	**elective**	(2+0+0) 2	
Fourth Level					
2nd semester	PHYS 202	General Physics 2	**Required**	(3+2+0) 4	Physics
	MATH 202	Calculus 2		(3+0+0) 3	Mathematic
	PHYS 211	Classical Mechanics		(3+0+0) 3	
	PHYS 231	Waves and Vibrations		(3+0+0) 3	Physics
	PHYS 241	Thermodynamics		(3+0+0) 3	
	PHYS 291	Thermal Physics Lab		(0+4+0) 2	
Year	**Course Code**	**Course Title**	**Required or Elective**	**Credit Hours**	**College or Department**

Fifth Level					
1st semester	PHYS 301	Mathematical Physics 1	**Required**	(3+0+0) 3	Physics
	MATH 310	Differential Equations		(3+0+0) 3	Mathematic
	PHYS 321	Electromagnetism 1		(3+0+0) 3	Physics
	PHYS 332	Optics		(3+0+0) 3	
	MATH324	Partial Differential Equations		(3+0+0) 3	Mathematic
	PHYS 351	Modern Physics		(3+0+0) 3	Physics
Sixth Level					
2nd semester	PHYS 302	Mathematical Physics 2	**Required**	(3+0+0) 3	Physics
	IC 102	Islam and building society		(2+0+0) 2	
	PHYS 393	Optics Lab.		(0+4+0) 2	Physics
	PHYS 342	Statistical Physics		(3+0+0) 3	
	PHYS 392	Electromagnetism Lab.		(0+4+0) 2	
	PHYS 352	Quantum Mechanics 1		(3+0+0) 3	
	PHYS 322	Electromagnetism 2		(3+0+0) 3	
Year	**Course Code**	**Course Title**	**Required or Elective**	**Credit Hours**	**College or Department**
Seventh Level					
1st semester	PHYS 422	Electronics	**Required**	(3+1+0) 4	Physics
	PHYS 452	Quantum Mechanics 2		(3+0+0) 3	
	PHYS 494	Modern Physics Lab.		(0+4+0) 2	
	PHYS 481	Nuclear Physics 1		(3+0+0) 3	
	PHYS 471	Solid state physics 1		(3+0+0) 3	
	IC 103	Economic system in Islam		(2+0+0) 2	
	PHYS 495	Practical Training		(0+2+0) 1	
Eighth Level					
2nd semester	PHYS 454	Atomic and molecular physics	**Required**	(3+0+0) 3	Physics
	PHYS 496	Solid state physics lab.		(0+4+0) 2	
	PHYS 497	Nuclear Physics lab		(0+4+0) 2	
	PHYS 499	Project		(0+4+0) 2	
		Department elective	Elective	(3+0+0) 3	
		Department elective		(3+0+0) 3	
		Department elective		(3+0+0) 3	

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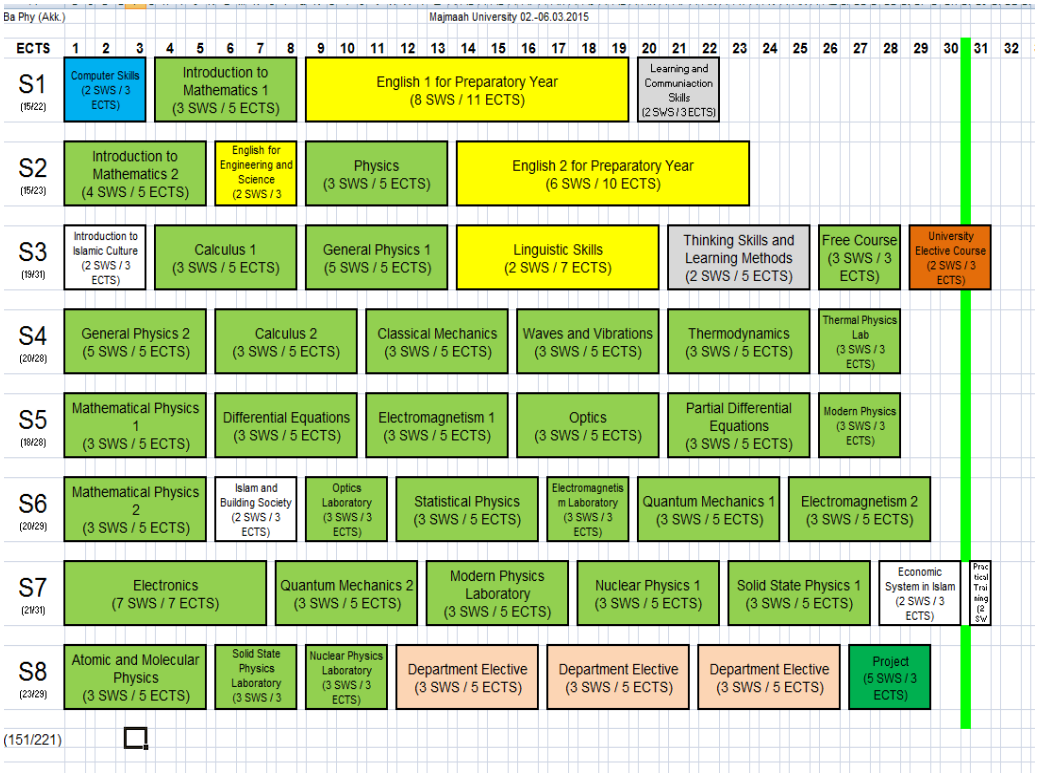
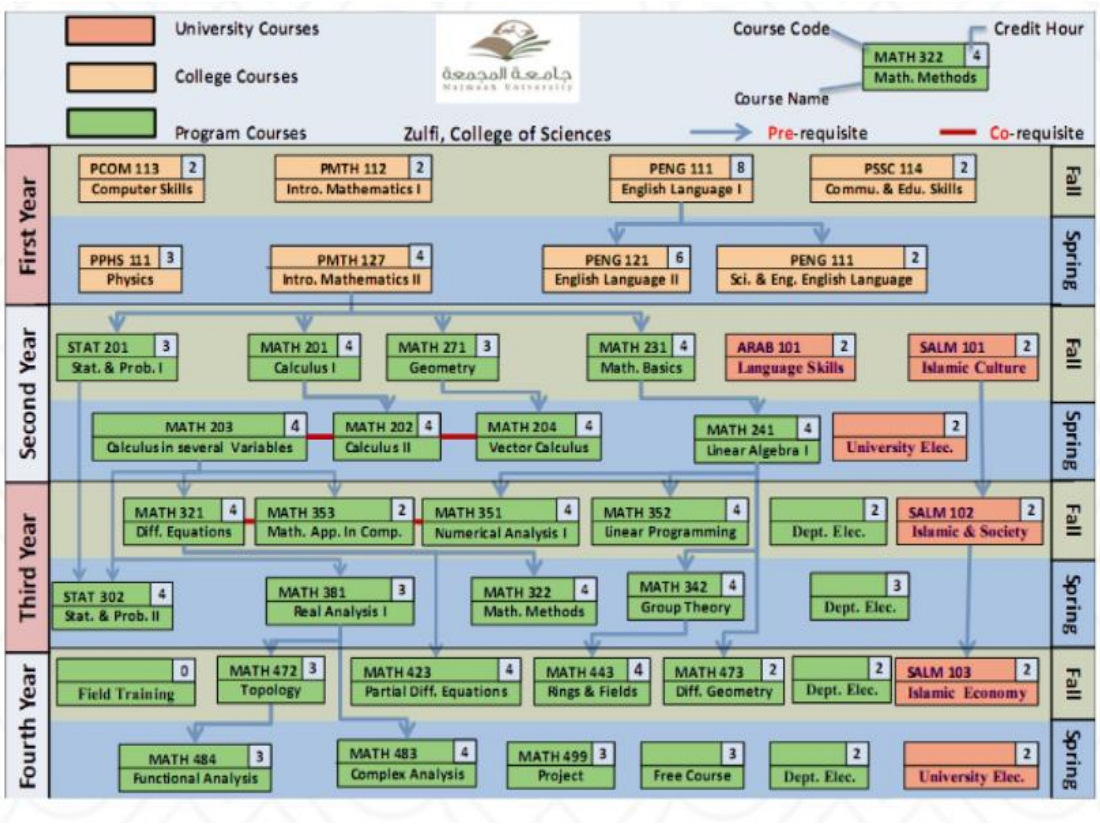


For the Bachelor's degree programme Mathematics, the self-assessment report states the following **intended learning outcomes**:

- Recognize and define the fundamental concepts of mathematics.
- Describe fundamentals and concepts of General sciences and Computer skills.
- Continue to acquire and apply mathematical and statistical knowledge and skills appropriate to professional activities
- Construct mathematical arguments and proofs and apply the underlying unifying structures of mathematics.
- Develop and nurture critical thinking skills to solve problems that can be modeled mathematically
- Demonstrate the work independently and within a team
- Illustrate and bear responsibility for different situations
- Analyze and realize the codes of ethics and their importance.
- Communicate mathematical ideas, both orally and in writing
- Critically interpret numerical and graphical data.

The following **curriculum** is presented:



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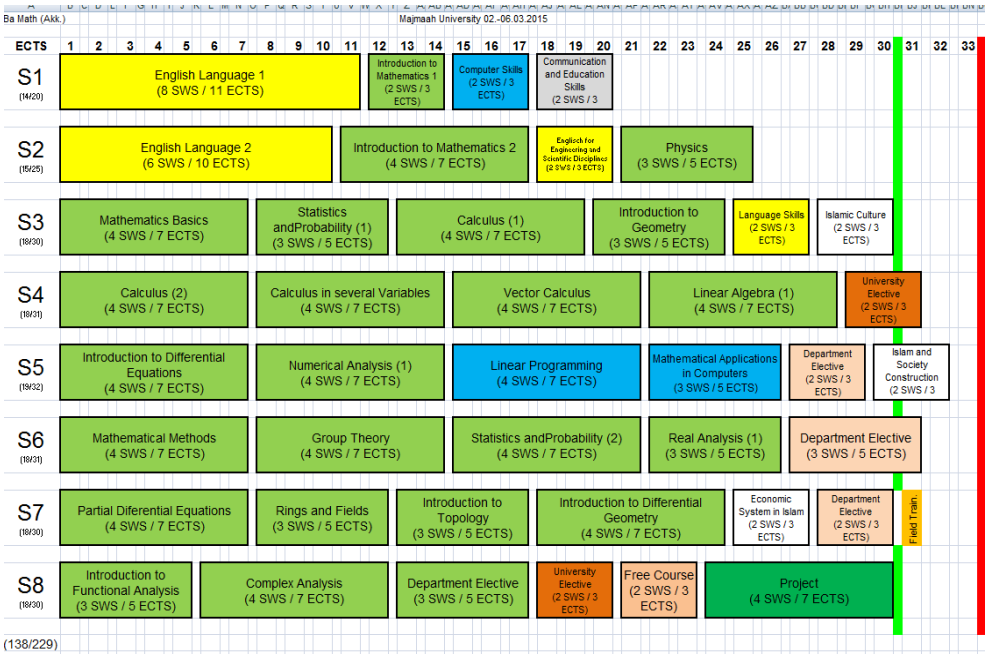

C Peer Report for the ASIIN Seal[3]

1. Formal Specifications

Criterion 1 Formal Specifications

Evidence:

- Formal Specifications according to the Self Assessment Report (SAR); see characteristics of the degree programmes, chapter B
- Respective study plan of the programmes, see also chapter B; available on the internet: http://mu.edu.sa/sites/default/files/videos/plan2412%20%283%29.pdf (Ba Computer Science and Information; Access: 15.04.2015); http://mu.edu.sa/sites/default/files/1/Zulfi/physics/PP_001_Study_Plan.pdf (Ba Physics; Access 15.04.2015; http://mu.edu.sa/sites/default/files/1/Zulfi/maths/MATH_Study%20Plan.pdf (Ba Mathematics; Access 15.04.2015)
- Sample of respective Diploma Supplement; available on the internet: http://mu.edu.sa/sites/default/files/Diploma%20Supplement%20of%20computer%20science%20Finshed-2%20%281%29.pdf (Ba Computer Science and Information; Access: 15.04.2015) http://mu.edu.sa/sites/default/files/1/Zulfi/physics/PHYS_13_Diploma_supplement.pdf (Ba Physics; Access: 15.04.2015); http://mu.edu.sa/sites/default/files/1/Zulfi/maths/MATH13%20Diploma%20supplement%20Mathematics%20Program.pdf (Ba Mathematics; Access: 15.04.2015)

Preliminary assessment and analysis of the peers:

In addition to the stated formal characteristics, the audit team was told that a single semester term normally takes 15 weeks of attendance time and three weeks of an additional examination period. Furthermore, the study year is said to be split up into two terms regularly, with a (short) third term in the summer months offered only on request of a sufficient number of students and mainly for the purpose of retaking exams or repeti-

[3] 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.

tion of certain courses, exercises or labs. Including preparation time for the final exams, a semester term therefore consists of roughly 20 weeks.

The formal characteristics of the said degree programmes (name, degree, mode of study, standard period of study, programme start date within the study year) do not raise general concern.

The unusual 10 semester standard period of study for the Bachelor's programme Computer Science and Information is said to follow a national requirement. The conversion of Saudi Arabian credit hours into ECTS credit points as presented by the university will be discussed at length in chapter C-3.2.

The audit team questioned the name of the Bachelor's degree programme Computer Science and Information. In particular, the phrase "Information" appears to be unclear without further qualification and does not easily align with international standards. With regard to the university's comment on this – namely that the degree programme is all about software as well as hardware aspects of computer-based systems – it might make sense to indicate this through a designation which is more familiar internationally (such as, for instance, "information technology"). Thus it is recommendable to qualify the "information" phrase in the name of the Computer Science programme (be it prescribed by the Ministry of Education or not).

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

The audit panel found the necessary formal specifications of the degree programmes to be sufficient and clear.

It is acknowledged that, according to the HEI's statement, the name of the study programme Computer Science and Information is going to be changed to the more suitable name "Computer Science and Information Technology". Since the modification has not yet been approved by the university, it is considered adequate to support the process through a related recommendation (see below, chapter F, recommendations, No. 6).

2. Degree programme: Concept & Implementation

Criterion 2.1 Objectives of the degree programme

Evidence:

- Study objectives of each programme according to the SAR

- Main programme objectives also available on the internet: for the Bachelor's programme Computer Science and Information cf. http://mu.edu.sa/sites/default/files/content-files/MPU04.pdf (Access: 15.04.2015); for the Bachelor's degree programme Physics cf. http://mu.edu.sa/sites/default/files/content-files/ASIIN_Learning_Outcomes.pdf (Access: 15.04.2015); for the Bachelor's degree programme Mathematics cf. http://mu.edu.sa/sites/default/files/content-files/Math%2003%20Consistency%20between%20The%20Aims%20of%20the%20Bachelor_0.pdf (Access: 15:04.2015)
- Respective chapter about job market perspectives of graduates in the SAR

Preliminary assessment and analysis of the peers:
The programme objectives of each respective degree programme were generally considered equivalent to the requirements of the Bachelor's level of higher education (level 6 of the European Qualification Framework (EQF)). Generally, they are also – if to a different degree and clarity – oriented towards the demand of the job market and specific requirements of subject-related industries of the public and private sector. Otherwise, the specific occupational profile of graduates of each programme (in the Bachelor's programmes Physics and Mathematics more so than in the Bachelor's programme Computer Science and Information) could have been stated more precisely, which in a way reflects a related concern with a view to the curricula of the programmes under consideration (see chapter C-2.6). As to that, a more decided focus on possible fields of application of computer science, physics or mathematics might permeate the curriculum development to also give more prominence to application-oriented and interdisciplinary competences of students in each disciplinary field as further explained elsewhere in this report.

Criterion 2.2 Learning Outcomes of the Programme

Evidence:

- Final Version of the learning outcomes in the follow-up to the audit; also available on the internet: see http://mu.edu.sa/sites/default/files/content-files/MPU04.pdf for the Ba Computer Science and Information; http://mu.edu.sa/sites/default/files/content-files/ASIIN_Learning_Outcomes.pdf for the Ba Physics; http://mu.edu.sa/sites/default/files/content-files/Math%2003%20Consistency%20between%20The%20Aims%20of%20the%20Bachelor_0.pdf for the Ba Mathematics (Access: 15.04.2015)
- Discussions with representatives of the university [objectives, classification]

Preliminary assessment and analysis of the peers:

All in all, the peers deemed the intended learning outcomes the degree programmes under consideration to be thoroughly and – with regard to the accreditation requirements – satisfactorily defined. Not only do they reflect the Bachelor's level of education (as is indicated in the previous chapter), but they also illustrate the *subject-specific* qualification profile graduates have achieved in the course of their studies. It is also appreciable that the university reportedly involves the needs and expectations of the industry and the labor market in the process of developing the programme learning outcomes and the related curriculum as well.

It should be noted that the present assessment is based on the "final" version of the programme learning outcomes having been submitted in the follow-up of the onsite visit. This is noteworthy because the peers considered the first version of the learning outcomes, in particular with respect to the Physics programme, as too generic to satisfactorily embrace a discipline-specific qualification profile of a Physics graduate at the Bachelor's level. Because this seems partly due to an inconsistency in the documentation of the relevant learning outcomes, they asked for a consolidated version of the intended learning outcomes for all degree programmes which could be relied upon as additional information.

The responsible programme coordinators apparently put much effort in matching the learning outcomes of different institutional levels (university, college, department, NCAAA, ASIIN). Thus, they are well suited to assess whether the respective set of learning outcomes does adequately reflect a given standard (be it from the university, the college or external quality assurance bodies like the national NCAAA or ASIIN). But at the same time these matrixes do not include a matching of the curricular content (courses) and thus do not allow an assessment of whether the intended learning outcomes are achievable in the curriculum of the respective degree programme. Insofar, the peers need to additionally take into account the module descriptions (labeled "course specification" here). Considering that, it could be stated that the defined learning outcomes are by and large embraced and specified through the learning outcomes that have been formulated for the individual modules/courses.

Nevertheless, it should be positively noted that one of the matrixes also provided a comparison between the intended programme learning outcomes and the exemplary learning outcomes of the relevant ASIIN subject specific criteria (SSC). Thus, it has been plausibly demonstrated that the discipline-related skills and competences being defined for the Bachelor's level in the respective SSC are broadly covered by the learning outcomes of the programmes.

This general result notwithstanding, the peers brought up concerns regarding the field of theoretical informatics and competences to be acquired therein if some of the core learning outcomes of the Computer Science programme shall be properly achieved. In this regard one may think, for instance, of the learning objective of students being able to "[a]nalyze a problem to identify and define the computing requirements appropriate for its solution". In order to achieve this learning objective, students would be required to particularly prove their ability of abstraction, modeling and transformation. Yet, it appears to be unclear whether these competences could be achieved when taking into consideration the curricular structure of the programme, as detailed above (cf. Section B of the audit report).

One of the main learning objectives of all programmes appears to be the applicability of the acquired knowledge, skills and competences in professional activities and for the solution of related problems. Thus graduates of the Computer Science programme should be able to "identify and analyse user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems", they should be able to "integrate IT-based solutions into the user environment effectively"; in the Physics programme, graduates are able to "develop the skill for analyzing/solving physics-based problems" and are capable of explaining "to a general audience the physical principles that underlie our understanding of nature"; and likewise, in the Mathematics programme graduates should have the ability of "continuing to acquire and apply mathematical and statistical knowledge and skills appropriate to professional activities". As these learning outcomes are vital for graduates to qualify for the job market, it is important to see how they are implemented in the respective curriculum.

It is noteworthy in this respect that the above cited objectives, though generally focusing on professional activities, are rather broadly defined, in particular in the Physics and Mathematics programme. Insofar it is apparently no coincidence that specific application-oriented and interdisciplinary competences which might specify relevant job profiles for the graduates of all programmes are generally considered to be improvable (for more detailed information cf. chapter C-2.6).

Criterion 2.3 Learning outcomes of the modules/module objectives

Evidence:

- Module handbook (here: "Courses Handbook" or "Courses Specification"); available on the internet: http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-handbook-0 (Ba Computer Science and Information; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/coursesspecificationreport20142015 (Ba Physics; Access: 15.04.2015);

http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-specification-semester-351 (Ba Mathematics; Access: 15.04.2015)

- Discussions with teaching staff and students

Preliminary assessment and analysis of the peers:

The peers noted that the module descriptions are, in principle, available online to the relevant stakeholders, students and teachers in the first place. They were considered encompassing and altogether adequately describing the intended learning outcomes as well as the content of the respective courses (equivalent to modules in the more technical sense of the word). In general, the course specifications can be said to systematically substantiate the learning outcomes that have been defined for the respective programme. Moreover, the teaching staff in most cases has successfully undertaken considerable efforts to differentiate the knowledge, skills and competences to be acquired in each course.

It has been positively valued in particular that the course descriptions of all programmes under consideration do not only satisfactorily detail the assessment methods, but also relate them to the intended learning outcomes of the course and the main teaching strategies as well. This provides for a good basis for peers and teachers alike to analyze whether these different aspects of the curriculum delivery are aligned to each other.

The audit team found some course specifications missing (in particular language courses and courses about Islamic culture) and therefore asked the programme coordinators to submit them before giving their final statement about the programmes. This has been done in the meantime. Since the Islamic culture-modules mainly address cultural differences and have no direct impact on the technical curricula they will not be further discussed here.

Some copy and paste-errors have been identified and occasional inconsistencies or confusion of numbers and data do occur. With respect to the altogether good state of the course descriptions, such deficiencies thus do not seem to indicate any substantial issues in the described aspects of the modules themselves. In the same vein, the peers consider the description of courses to be a “living document”, supposed to be updated on a routine basis. They assume that this will take place in a regular and reliable manner.

Criterion 2.4 Job market perspectives and practical relevance

Evidence:

- Information about job market perspectives and practical relevance of the degree programmes (chapter 2.4 of the respective SAR)
- Information about relevant practical elements of the degree programmes (chapter 2.4 of the respective SAR)
- Courses Specification or Module Handbook; available on the internet: http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-handbook-0 (Ba Computer Science and Information; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/coursesspecificationreport20142015 (Ba Physics; Access: 15.04.2015); http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-specification-semester-351 (Ba Mathematics; Access: 15.04.2015)
- Relevant statistical data: Graduate employment rate; Report of the Alumni Unit; available on the internet: http://mu.edu.sa/sites/default/files/1/Zulfi/maths/ZCS09%20Alumni%20Unit%20%281%29.pdf (Access: 15.04.2015)

Preliminary assessment and analysis of the peers:

From the peers' perspective, it is doubtless that the degree programmes under consideration harbor excellent job opportunities, especially in emerging job markets. This in turn would require the curriculum development to implement an application-oriented and at the same time interdisciplinary approach which is at the basis of most modern technological developments.

According to the SAR, all three programmes are based, inter alia, on the needs and expectations of the industry. In order to identify these specific demands and expectations of different industrial branches, industrial cooperation in research projects reportedly provides a forum of information exchange. Although laboratory and project work as well as practical training are mandatory elements for students of each study programme, the audit team felt that in terms of contents the interdisciplinary scope and application-oriented approach in the curricula could be improved. This has been the impression especially with regard to the Bachelor's programme in Mathematics, but can also be said of the Physics and the Computer Science programmes. As a result, the peers consider it recommendable enlarging the interdisciplinary competences and application skills of students, thus paving the way for new professional fields of activity. In line with this judg-

ment, students of all three Bachelor's programmes in their written statement unanimously expressed their wish to have more authentic working life projects being utilized as project assignments in their respective programme.

Irrespective of the hitherto relatively low numbers of graduates in the programmes, the ratio of unemployed is apparently significant (ranging from 36% to 49% in the period 2010-2013). This fact may be attributed to many reasons, with a still unconsolidated job market in the Zulfi region being only one of them. Up to now, the university obviously didn't further inquire into the reasons for unemployment which, however, might bear meaningful information for the further development of the programmes. With respect to this observation, it appears to be commendable to also evaluate possible causes for unemployment through adequate survey instruments. This might be done more effectively if external stakeholders, such as possible employers of the private sector, are involved into the inquiry on a regular basis.

Part of this picture might also be the mistakable nomination of the "practical training" in the Physics programme which is largely a preparation course for the graduation project. That is to say: The course Practical Training does not figure as a project work in itself but rather as an introduction into scientific work, writing a graduation work, and training to use research equipment or software under supervision of one of the Staff members. In order to highlight the impact of this course not only for working on the graduation project but more importantly for the theoretical and practical aspects of solving problems scientifically, it would be much more convincing to transfer the course to an earlier stage of the study. Thus students could be enabled very soon after commencing their studies to use subject-specific data bases or software for instance in their laboratory work. The peers recommended shifting the said course accordingly.

In comparison to the Practical Training course in the Bachelor's programme Physics, the module "Field training" in the Mathematics programme is designed as an internship (at least six weeks with at least 3 days per week and 4 hours daily student work). Reportedly, to date students are primarily assigned to schools, but private sector enterprises or companies are planned to be involved in the cooperation in the middle term. A course specification for the "Field training" which is a mandatory part of the curriculum seems to be still missing and should be provided along with the statement to the report of the College of Science. It should be made available as well (on the internet, for instance), like the other course specifications. Regarding this, the course description should provide, inter alia, reliable information on whether credit hours respectively ECTS credit points have been allocated to this course. The SAR and the additional comments of programme coordinators during the audit talks couldn't clarify this point satisfactorily.

Criterion 2.5 Admissions and entry requirements

Evidence:

- Respective chapter of the SAR
- Articles 2 to 4 of the "Laws of Undergraduate Study and Examinations and Majmaah University Implementation Rules"; available on the internet: http://mu.edu.sa/sites/default/files/MU03.%20Implementation%20Rules%20of%20Undergraduate%20Study%20and%20Examinations.pdf (Access: 15.04.2015) [Admission Rules]
- Articles 42ff. of the "Laws of Undergraduate Study and Examinations and Majmaah University Implementation Rules"; available on the internet: http://mu.edu.sa/sites/default/files/MU03.%20Implementation%20Rules%20of%20Undergraduate%20Study%20and%20Examinations.pdf (Access: 15.04.2015) [Rules of Transfer]
- Audit talks with representatives of the university

Preliminary assessment and analysis of the peers:

It becomes clear from the SAR, the body of relevant rules and regulations and the additional comments of the representatives of the university that the admission procedure is put in practice as a multi-stage process. Prospective students do not only have to successfully pass secondary school but need to also pass a joint universities application system, thereby meeting a series of prerequisites with regard to their disciplinary skills and competences as well as their conduct. Additionally, the governing regulation determines that the University Council decides about the numbers of students to be admitted, taking into account recommendations of the College Councils and the respective departments at the college.

It is well noticed that the university entrance examinations for all programmes comprise the subject fields of mathematics and natural sciences. However, peers wonder why apart from knowledge in the Computer Science and Physics fields students are required to prove some knowledge in Chemistry if applying for admission to the Computer Science programme. To mention this is especially worthwhile since Chemistry is also one of the subjects aimed at broadening the disciplinary competences in the Computer Science programme which is questioned by the peers (see chapter C-2.6).

In principal, an international scope of the programmes seems to be followed consequently since the College opts for the English language as main language of instruction. A good command of English as entry requirement which is stressed in the respective SAR

then appears to be self-evident. At the same time, the curriculum of the programmes reserves a relatively large part of the preparatory year for English language courses. Insofar it could be stated that the College has arranged for conditions allowing students to acquire the foreign language skills needed to successfully follow the courses. However, the conversation with students eventually raises the question of how many of them really meet these prerequisite language skills. The peers advised the College to particularly monitor the language skills of students and take appropriate measures, if necessary.

In sum, the audit panel deemed the admission rules and procedures put in place to be adequate to ensure the subject-specific qualification of school graduates applying for university admission.

Regarding the recognition of academic activities achieved at other universities, the existing rules largely apply to the transfer of students from one university in Saudi Arabia to another and within Majmaah University, but at least formally leave out the possibility of incoming students from abroad or outgoing students for studying abroad. Moreover, with respect to the recognition issue these rules aren't in the first place oriented towards the recognition of skills and competences which have been acquired, but towards content and grades earned. Peers therefore advised the university to consider further developing the rules covering the recognition of activities completed at other universities (either in Saudi Arabia or international) referring to the European standard, meaning that the acknowledgement should primarily be based upon the acquired skills and competences of students.

Criterion 2.6 Curriculum/Content

Evidence:

- Curricula according to the characteristics of the degree programmes; see above chapter B
- Study plans as publicly available on the internet: http://mu.edu.sa/sites/default/files/plan2412.pdf (Ba Computer Science and Information; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/study-plan-5 (Ba Physics; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/mathematics-program-plan (Ba Mathematics; Access: 15.04.2015)
- Module handbook (here: "Courses Handbook" or "Courses Specification"); available on the internet: http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-handbook-0 (Ba Computer Science and Information; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/coursesspecificationreport20142015 (Ba Physics; Access: 15.04.2015);

http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-specification-semester-351 (Ba Mathematics; Access: 15.04.2015)

- Audit discussions with programme coordinators, teaching staff and students

Preliminary assessment and analysis of the peers:
Peers intensively discussed with the programme coordinators the design of the Bachelor's programme Computer Science and Information. According, as it seems, to a national ruling the standard study period for the programme differs significantly from the other two Bachelor's programmes and stretches over ten semesters.

Aside from the unclear use of the phrase "information" in the name of the study programme which has already been referred to in a previous chapter of the report (see above chapter 1), broadening the students' competences in the area of natural sciences and, specifically, in the field of Chemistry was not considered convincing. This is especially true with regard to the intended learning outcomes. As a mere supplement to the prerequisite knowledge and skill basis for the study of Computer Science one would have expected the General Chemistry course in the preparatory year, not in the regular first year (fourth term) of the curriculum. Furthermore, this course would be considered as a typical elective course, not as a compulsory component of the curriculum. The credit hours/points allocated to it therefore might have been better invested in a plausible immersion of advanced basics in physics. With a view to adjusting the curriculum in the direction of strengthening its orientation to application fields and interdisciplinary cooperation (see chapter 2.4), it appears to be advisable that natural sciences courses should be more directed to the programme specific qualification profile. This point, of course, applies to all study programmes under review and underlines the recommendation to enlarge the interdisciplinary and application-related competences of the students.

In this context, the peers also addressed the question of the students' competences in the field of theoretical Informatics. From the curriculum, the SAR and the course descriptions, they received the impression that core aspects of theoretical Computer Science aren't yet covered by the curriculum, as for instance Complexity Theory, NP Completeness, Basics of Recursion Theory or Syntax and Semantics (up to the first-order logic) are largely missing. Students' competences in the field of Theoretical Informatics need to be strengthened. Removing or shifting the General Chemistry course, for instance, might leave room for such an improvement.

Furthermore, the audit panel questioned the content and intended learning outcomes of the "Digital Photography" course in the Bachelor's programme Computer Science and Information (an elective course within track I). The peers were told that the course is con-

ceived as an introduction to the Multimedia topic aiming to make students familiar with, for instance, compression theory and imaging processing by way of example. It is generally felt that scientific learning objectives like these should be made more visible and stated more explicit in the course specification than is the case presently. This may also be taken as an exemplary case to generally suggest reappraising the course specifications with a view to its proper substantiation of the content and learning objectives of the course in future revisions.

With a view to the overall felt need to bolster the strategic orientation of all programmes towards possible fields of application, the modeling and simulation units in each degree programme could serve as an important starting point. The more so, since the intended learning outcomes of all programmes inter alia encompass the ability of students to creatively use modeling and simulation techniques they are taught in the course of their curriculum. That way, students of the Bachelor's programme Computer Science and Information are supposed to "acquire knowledge of computing and mathematics appropriate to the discipline including simulation and modeling", students of the Physics programme are considered to able to "design and use valid Physics models in physical laboratories" and students of the Mathematics programme have acquired the ability "to solve problems that can be modeled mathematically".

Apart from the said deficiencies in the Computer Science programme as well as the potential for improvement in all programmes discussed above, all curricula are considered to implement the intended learning outcomes in a comprehensible manner.

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

The requirements of the different criteria summed up in this chapter have been met for the most part but not fully yet.

Having deliberately taken into account the statement of the HEI and the additional evidence which has been produced with a view to such issues as study objectives, learning outcomes, occupational as well as qualification profile, the peers found the considerable efforts of programme coordinators laudable.

However, from a methodological point of view, they got the impression that these efforts generally focus very much on the peers' assessment rather than directly aiming at providing meaningful information. Amending the Self assessment report – as has been done for instance with respect to the occupational profile of the degree programmes – will not in itself function as a readily available information source for stakeholders, although the result might be accessible on the website of the College of Science. Few people will refer

to the accreditation documents for the degree programmes when looking for general information about the degree programmes. In terms of quality assurance and quality management all such information should primarily be directed to the students and other relevant stakeholders.

Following this, it is appreciable that occupational profiles of the Bachelor's programmes have been specified not only within the respective chapter of the SAR but also by placing them prominently on the websites of the Departments or the programmes respectively. Otherwise, any meaningful specification of occupational profiles of a study programme needs to be assessed within the framework of the curriculum development (as to that see the remarks to the application-oriented and interdisciplinary competences of students/graduates below).

Peers were thankful for the submission of a consolidated version of the respective learning outcomes. No further steps need to be taken in this regard. It is also appreciated that, in principle, the intended learning outcomes of the respective degree programmes now could also be traced to the modules which are supposed to convey those skills and competences (see additional objective matrices). This matching of learning outcomes and curriculum allows for an immediate assessment of whether the self-imposed learning outcomes are reasonable and adequate with a view to the envisaged curriculum. Yet, it should also be stated that, meanwhile, the matrices are very complex and difficult to read due to the information implied in the numerical codes for learning outcomes and modules. In spite of this, it is hoped that the matrices shall prove useful for the further development of the programmes. Whatever the case, the peers have already stated their positive conclusion in the preliminary assessment.

Concerning the deficiency in the field of theoretical informatics, which the peers identified with a view to the curriculum of the Computer Science programme, the programme coordinators' reference to modules like Probability and Statistics, Software Engineering, Operational Research and Digital Image Processing had also been noticed previously. There is no information in this exceeding the insight the peers gathered through the SAR and the audit discussions. Furthermore, at least two of these modules are electives, meaning that they are components of different tracks of the Computer Science programme and thus do not contribute to the qualification profile of each and every student/graduate of the programme. In this regard, the curriculum will benefit considerably from the intention to complement a computational complexity course (CSI 413) which apparently has earned the approval of the College council, but is still awaiting the university's consent. Until its implementation has been finally approved, the peers therefore confirm the requirement that has been stated for this purpose (see below, chapter F, requirements, No. 3).

Regarding the application and interdisciplinary competences of students/graduates, the comments and additional information given by the HEI are welcomed. They contribute to an even better understanding of the respective study concept and the deliberate composition of the curricula. As has been indicated by the peers, the Computer Science programme through its approach of different study tracks seems better equipped to confront interdisciplinary and application-oriented problems than the other Bachelor's programmes. But the programme coordinators apparently have gone further and initiated first steps to either add (Mathematics and Physics programmes) or remove (Computer Science programme) natural science courses in order to increase the curricular focus on application and/or interdisciplinary issues. Again, the Computer Science programme appears to be frontrunner by shifting the General Chemistry course from mandatory to elective and from Chemistry to either Chemistry or Biology. Understandably, this could hardly be expected to be finally implemented on such short notice. In fact, the peers considered this to be an issue that should be dealt with in the course of the ongoing programme development. They therefore deemed a recommendation supporting and encouraging the planned measures in this direction to be adequate (see below, chapter F, recommendations, No. 5).

The peers appreciated the announcement of the programme coordinators that the unemployment rates of graduates in the Bachelor's programmes will be further discussed and inquired through appropriate means. The proposed measures, also involving the support and feedback of employers, are purposive. Because of the importance of the matter in terms of quality assurance, peers of the re-accreditation procedure should have a close look at the impact of those measures. The peers therefore proposed a recommendation aiming for this purpose (see below, chapter F, recommendations, No. 1).

The intention of the programme coordinators of the Physics programme to consider a shifting of the "practical training course" as soon as possible – if not immediately due to lengthy decision-making processes – was welcomed and supported by the peers. Against this background, they confirmed a recommendation they have formulated precautionary (see below, chapter F, recommendations, No. 8).

The submission of a detailed description of the "Field training"-course in the Mathematics programme has been noticed. The design of the course is strongly supported by the peers due to its manifested immersion of theoretical courses through professional experiences and thus to its potential for enlarging the students' competences vis à vis the demands of the job market (for a further assessment see below, chapter 3.2).

It has also been positively noted that the heads of the departments were keen to receive the peers' suggestions concerning the proper description of course content and learning outcomes through updating the course specifications on a routine basis.

3. Degree Programme: Structures, Methods & Implementation

Criterion 3.1 Structure and modularity

Evidence:

- Respective Chapter of the SAR
- Study plans as publicly available on the internet: http://mu.edu.sa/sites/default/files/plan2412.pdf (Ba Computer Science and Information; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/study-plan-5 (Ba Physics; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/mathematics-program-plan (Ba Mathematics; Access: 15.04.2015)
- Module handbook (here: "Courses Handbook" or "Courses Specification"); available on the internet: http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-handbook-0 (Ba Computer Science and Information; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/coursesspecificationreport20142015 (Ba Physics; Access: 15.04.2015); http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-specification-semester-351 (Ba Mathematics; Access: 15.04.2015)
- Audit discussions

Preliminary assessment and analysis of the peers:

The structure of the curriculum of the degree programmes under review is considered to be plausible, consistent and – with reservations made in the previous chapter – adequate with respect to the intended learning outcomes. Each curriculum appears to be composed of modules (here named "courses") which the peers deemed to be comprehensible and self-contained teaching and learning units, with a principally plausible range of contents and credit hours / credit points each (see following chapter).

The possibility to spend some time at another university without loss of time and the procedure of recognizing qualifications gained at other universities in Saudi Arabia or abroad

has already been taken into account. However, the regulations put in place for that purpose are largely focusing on the transfer within Saudi Arabian universities and should be further developed so as to apply to students who study abroad (see above chapter C-2.5). This, in turn, is not least due to the fact that the issue of studying abroad is just starting to become significant. Peers agreed to the expectation that it will receive growing importance as planned Master programmes will have been implemented. In the talks with the students, some of them expressed their interest in being part of the international research community by e.g. attending subject-specific conferences. Such engagement and scientific curiosity were highly appreciated and should be supported by any means. The teaching staff emphasized that they offer information on possibilities for going abroad regularly. Therefore it can be concluded, generally, that there are opportunities for study visits at other HEIs ("mobility window") and that these are integrated into the curriculum in a reasonable way.

Criterion 3.2 Workload and credit points

Evidence:

- Curricula according to the characteristics of the degree programmes; see above chapter B
- Study plans as publicly available on the internet: http://mu.edu.sa/sites/default/files/plan2412.pdf (Ba Computer Science and Information; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/study-plan-5 (Ba Physics; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/mathematics-program-plan (Ba Mathematics; Access: 15.04.2015)
- Module handbook (here: "Courses Handbook" or "Courses Specification"); available on the internet: http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-handbook-0 (Ba Computer Science and Information; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/coursesspecificationreport20142015 (Ba Physics; Access: 15.04.2015); http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-specification-semester-351 (Ba Mathematics; Access: 15.04.2015)
- Discussions with students / student's statements

Preliminary assessment and analysis of the peers:

The credit hour system, used in the Saudi Arabian higher education system is primarily based on the attendance time of students, not on their actual workload which would

have to include also the working hours of private self study. As a rule, the modules are allocated 2 to 4 Saudi Arabian credit hours. In principle, one credit hour is awarded for 1 hour of lectures or – though not always – 2 hours of tutorials / labs. Between 14 and 18 credit points are awarded per semester in the Bachelor's programmes under review.

As the credit hour system only encompasses the presence hours of students without referring to (additional) students' self-study, it is virtually incomparable to the European Credit Transfer System (ECTS). It is therefore laudable that the programme coordinators have transferred the credit hours allocated to the courses into the ECTS in an effort to plausibly indicate the actual workload students have to spend for each course. Unfortunately, in doing this, a series of figures in the conversion tables is hardly understandable if judged by the underlying premise. To begin with, the sum total of ECTS credit points award for the Bachelor's programmes Physics and Mathematics appears to be somewhat inconsistent compared to the ratio of student workload per ECTS credit point which has been adopted according to the respective SAR (25h to 26h/ECTS point; 221 – 230 ECTS credit points for the Mathematics programme instead of 234; 226 – 236 ECTS credit points for the Physics programme instead of 240). Also, if measured against the arithmetical workload students are supposed to spend for a course in these programmes (25h instead of 30h), the sum total for the Computer Science programme would add up to nearly 340 ECTS credit points provided that the cumulative workload numbers in the tables are correct.

Thus, in purely arithmetical terms the resulting workload of the courses does not only differ across all programmes. But there are also significant discrepancies, in particular in the Physics programme and in the Mathematics programme, that aren't self-explaining (cf. excel table in the attachment). It is perfectly well comprehensible, to assume a considerably higher number of student working hours for subject-specific courses despite the same number of credit hours as others. Converted into the ECTS, this nevertheless would normally result in a higher number of ECTS credit points. In turn, the attribution of ECTS credit points staying almost the same, despite expecting a higher student workload, results in a varying workload / ECTS credit point ratio. Utilization of the ECTS credit point system would then inevitably become blurred and unreliable, since the allocation of the same number of credit points would rather hide the assumptive divergence in the underlying workload / ECTS credit point ratio. These peculiarities might be attributed to some extent to a credit point system Saudi Arabian universities are not accustomed to. As a consequence, it seems advisable to check and, if necessary, adapt the conversion of credit hours into the ECTS credit point system. In line with this and according to a suggestion of the students, the peers deemed it commendable to monitor the allocation of credit

points as a measure of the actual student workload on a routine basis so as to impose corrections, if necessary.

The above stated inconsistencies notwithstanding and for the time being, the overall student workload seems to be calculated realistically, as the students principally confirmed in their oral and written statements.

Regarding the field training in the Bachelor's programme Mathematics, the peers noticed that despite being a mandatory component of the programme no credit points are awarded for this course. In the same vein, the practical training course in the Computer Science programme ("Summer Training course") which is awarded 2 ECTS credit points for six weeks work as an employee (with at least three days work in a week) obviously barely relates to the student's actual workload. As to this, the audit team pointed out that mandatory student work has to be adequately represented within the credit point system; generally, all compulsory components of the study programme have to be included into the distribution of credit points (as to the Field Training in the Mathematics programme).

Criterion 3.3 Educational methods

Evidence:

- Respective Chapter of the SAR
- Teacher's Quality Manual (see Annex ZCS02)
- Professional Teaching Standards for Majmaah Staff (see Annex ZCS11)
- Module handbook (here: "Courses Handbook" or "Courses Specification"); available on the internet: http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-handbook-0 (Ba Computer Science and Information; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/coursesspecificationreport20142015 (Ba Physics; Access: 15.04.2015); http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-specification-semester-351 (Ba Mathematics; Access: 15.04.2015)
- Audit talks with programme coordinators and students

Preliminary assessment and analysis of the peers:

In general, the teaching methods in use were deemed appropriate to support the attainment of the intended learning objectives. And in this respect it is particularly laudable that programme coordinators and the teaching staff are well aware of the connection between intended learning outcomes and the teaching methods referred to for that purpose. Thus, it could be seen that a range of didactical methods are applied in order to

make sure that the intended learning outcomes shall be achieved by the students, as e.g. lectures, classroom and laboratory exercises, assignments, project work, and seminars.

It is well received that the (relatively small) final/graduate project(s) in all programmes comprises a (Bachelor) seminar including a written project work, a seminar presentation and a colloquium dealing with the topic of the graduate project. Significantly, when asked about courses in which planning, testing, demonstrating and presentation competences are required all at once, students mainly referred to the final (graduation) project (as to that see below chapter C-4). Since this project is placed at the end of the student's study course, the peers couldn't identify any learning unit or teaching form prior to the graduation work appropriately *preparing* students to carry out a scientific task independently and thus encourage scientific self study. This might, for instance be achieved through implementing an additional seminar in an earlier stage of the study plan. Yet other didactical concepts pursuing this aim are conceivable as well.

Switching the Practical Training course in the Physics programme to an earlier stage in the curriculum, as has been discussed and recommended previously (see above chapter C-2.4), may also serve as an important groundwork to accomplish this aim. Research competences regarding the efficient use of relevant data bases as well as application competences with respect to the command of software tools are essential for all kinds of experimental or research work thus obviously decisive prerequisites for any scientific work.

Eventually, another issue that has been addressed already (see above chapter C-2.5) needs to be picked up here. Although it is generally appreciable with a view to the international scope of the programme development that all study programmes are said to be carried through in English language, the students' command of English appears to be limited, as far as could be judged from the audit talks. Apparently, the language used for oral teaching is a mixture of English and Arabic, where Arabic language is used when the students are unable to understand and communicate contents in English language. Nevertheless, it could be recognized that programme coordinators are aware of these deficiencies and have already initiated steps to improve the situation. Thus, during the preparatory year English is taught to the students. Principally, of course, the use of the local language is fully acceptable but in light of the objective set by the College itself, the peers found it advisable to thoroughly monitor the English language skills of the students and take appropriate measures, if deemed necessary.

Criterion 3.4 Support and advice

Evidence:

- Respective chapter of the SAR

- Study Guide for Studying and Learning (see Annex ZCS03); available on the internet: mu.edu.sa/sites/default/files/videos/ZCS03%20Quality%20Guide%20.docx (Access: 15.04.2015)
- Student Guide; available on the internet: http://mu.edu.sa/sites/default/files/1/Zulfi/csi/student_giude26-8-1435%20Fished-1.pdf (Access: 15.04.2015)
- Audit discussions with students and Teaching Staff

Preliminary assessment and analysis of the peers:
The peers acknowledged that there are sufficient resources to guarantee support and counseling for students. Both, the staff and the students seemed highly engaged in the academic activities, and good relationships evidently exist between students and staff. Reportedly, the teaching staff is highly responsive towards the students' needs and complaints as well, which is not least reflected by the obligatory five office hours per week teachers are mandated to be at the disposal of the students.

Highly appreciable are the various student guides mostly available on the internet which were considered a helpful and instructive source of student information.

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

The criteria summarized in this section are largely met. In a few instances though, there is room for improvements.

It has been appreciated that the Departments offering the degree programmes took critical indications of the peers as an opportunity to check and update the conversion of Saudi-Arabian credit hours into the ECTS credit point system. In this respect, the peers were especially grateful for the adjustment of the workload calculation of the summer training course in the Computer Science programme (including the updated course specification) which is much more plausible. Henceforth, it will be of major importance to foster an understanding of the difference between the Saudi Arabian credit hour system and the ECTS system among lecturers and students as well. Otherwise, the conversion scheme and the idea of raising the awareness of the *learner perspective* in developing and conducting degree programmes, which is the underlying premise of the ECTS system, will basically prove futile.

The peers took note of the Departments comments on the didactical means foreseen to enable students to work scientifically. Regarding this however, they received the impres-

sion that the HEI's statement essentially summarizes the information given in the SAR and in the audit talks. Though not fully convinced that the actual didactical means to serve this purpose work sufficiently well, the peers could see that the programme coordinators and Departments are fully aware of the importance of this ability, in particular with a view to the graduation project/Bachelor thesis (in the sense of a scientifically demanding capstone project). If the Departments are going to successfully develop their graduate projects in a way that meets the expectations of a standard scientific work on Bachelor's level in terms of subject, depth of study and volume (see below, chapter 4), it could be assumed that, if necessary, efforts will be taken to ensure that the didactical means referred to here (transferable skills courses, seminars and others) adequately contribute to students' scientific/research competences. With that reservation, the peers didn't insist on a requirement for this purpose as previously proposed, but considered a respective recommendation sufficient, thus indicating that this issue will be specifically observed in the course of the reaccreditation procedure (see below, chapter F, recommendations, No. 2).

The additional information about the "Field Training" in the Mathematics programme was considered substantially insightful (see also above final statement regarding criterion 2.4). Unfortunately, no further comments have been made on whether the "Field Training" is awarded ECTS points. Since it is a compulsory component of the curriculum, all students of the Mathematics programme are required to spend a considerable amount of workload on it which needs to be taken into account. This normally would have been done through the allocation of an appropriate number of ECTS credit points. So far, on the basis of the study plan available, the "field training" is not included in the distribution of credit points. Following this, the peers concluded that this issue needs to be addressed in a respective requirement (see below, chapter F, requirements, No. 2). They generally found that students' actual workload and the correspondent allocation of (ECTS) credit points should be monitored in order to implement curricular modifications or adapt the allocation of credit points, if necessary. A proposed recommendation to this end has been confirmed (see below, chapter F, recommendations, No. 1).

It is appreciable that the programme coordinators plan to transfer the "Practical Training" module in the Physics programme to an earlier stage in the curriculum so as to more effectively support the corresponding learning outcomes. Since, according to the programme coordinators, no binding decision on that will be taken in the short run, the peers favoured a recommendation to be particularly checked in the course of the reaccreditation procedure (see below, chapter F, recommendations, No. 8).

Furthermore, the peers explicitly confirmed their advice to the Departments that an extension of the research activities would be supportive in fostering the adaptability of the

programmes and the competences of students in highly volatile professional environments (see below, chapter F, recommendations, No. 3).

4. Examination: System, Concept & Implementation

Criterion 4 Exams: System, concept & implementation

Evidence:

- Respective chapter of the SAR
- Implementation Rules of Undergraduate Study and Examinations (Annex MU03); also available on the internet: http://mu.edu.sa/sites/default/files/MU03.%20Implementation%20Rules%20of%20Undergraduate%20Study%20and%20Examinations.pdf (Access: 15.04.2014)
- Guide of the Evaluation and Measurement Unit for Tests (Annex ZCS12); also available on the internet: http://mu.edu.sa/sites/default/files/videos/Evaluation%20and%20Measurment%20Guide2%20Finshed.pdf (Access: 15.04.2015)
- The calculation of the Final Grade (GPA) (Annex ZCS04)
- Module handbook (here: "Courses Handbook" or "Courses Specification"); available on the internet: http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-handbook-0 (Ba Computer Science and Information; Access: 15.04.2015); http://mu.edu.sa/en/colleges/college-science-al-zulfi/coursesspecificationreport20142015 (Ba Physics; Access: 15.04.2015); http://mu.edu.sa/en/departments/college-science-al-zulfi/courses-specification-semester-351 (Ba Mathematics; Access: 15.04.2015)
- Audit talks with programme coordinators, teaching staff and students

Preliminary assessment and analysis of the peers:

First of all, it is highly appreciable that the College of Science apparently lays great stress on the interdependency between the formulation of viable learning outcomes for the different courses, the teaching staff's deliberate decision about appropriate teaching methods to achieve these objectives and the well-thought-out selection of assessment methods fit to measure the students' achievement of the indented learning outcomes. This interrelation is reflected in the various teaching guides/manuals and, consequently, has been included in the course descriptions. Therefore, programme coordinators and teaching staff are obviously well aware of the necessary correlation between learning

outcomes on the one side and assessment tools on the other. It therefore comes to no surprise that apparently a range of different assessment methods is in use. In most courses, a diversity of assessment tools is employed. Reportedly, courses are seldom evaluated by the final examination only. It is common that assignments, laboratory works, homework, etc. also contribute to the final grade of a course. The variety of assessment methods in principle notwithstanding, written examinations (particularly in the final exam) and assignments are obviously prevailing – as programme coordinators and students consonantly attested. Oral assessments, for instance, do mainly occur in case students are obliged to repeat exams. Apart from that, the downside of the outlined assessment strategy could be seen in the heavy load of examinations students have to pass in both a course and a single semester. However, a close monitoring of students' progress may be ascribed the benefit of encouraging them to sustained learning and of maintaining their interest in the course – as the teaching staff plausibly argued and students confirmed during the audit. To sum up, it could be stated that the exams in principle appropriately measure the achievement of learning outcomes.

Nevertheless, considering the cumulative effect of the distribution of different assessments during the course and the prevalence of written assessments, the peers questioned whether the assessment strategy of the College at the same time ensures the students' comprehensive understanding of the respective courses subject-specific matters. In other words, they were concerned that assessment methods that principally correspond to individual learning outcomes, in particular in terms of understanding rather than skills and competences, eventually also cover the coherence and interrelation of the learning outcomes defined for a course as a whole. Regarding this, the audit team recommended to further develop the assessment methods so as to better grasp the students' comprehensive understanding of the respective course content and actual achievement of competences, particularly their ability to actively participate in a scientific discourse.

The peers discussed intensively with programme coordinators the range, level and depth of the final Project / Graduation Project. Graduation projects have to be worked on in the final stage of the study of each degree programme (last term in the degree programmes Physics and Mathematics; two graduation projects in the seventh and eighths term in the Computer Science Programme). According to the respective course specification, each Project / Graduation Project is designed as a research work. While the Graduation Projects in the Computer Science programme are supposed to be dealt with by groups of students, the Project in the Physics respectively the Mathematics programmes should be worked on by individual students. From the course descriptions and the samples of project works peers inspected during the onsite visit, they came to the conclusion that the

said Projects / Graduation Projects as yet do not satisfactorily correspond to the expectations of a standard scientific work on Bachelor's level in terms of subject, depth of study and volume. Referring to the College of Science Mission to provide "scientific excellence through plans and programs [that] enable students to acquire the knowledge and skills needed to compete in the labor market", the peers pointed out to the university that each programme, first and foremost, should encompass a Bachelor thesis or a capstone project, wherein the *individual* student proves that he is capable to carry out an assigned research task independently and at the Bachelor level of qualification. This qualification would have to be accompanied by the student's ability to describe, explain and solve a discipline-related problem before an expert audience.

The rules for examinations and advancement seemed to be well known by students and lecturers alike. Generally, the regulations allow for an adequate exam preparation of students. Apparently, they were also considered transparent by the students as far as grading criteria are concerned. On request, students described the organization of examinations as appropriate and responsive to their needs. This judgment explicitly included the possibility of retaking examinations (three times) and the accompanying counseling through the teaching staff. In general, the discussions with students and lecturers confirmed the impression that the organization of exams is supportive regarding the achievement of the study objectives and in terms of completing studies within the standard period of study.

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

The examination system was deemed as not satisfactorily fulfilling the requirements. In particular, the obligatory graduation projects in the Bachelor's programmes weren't considered equivalent to the standard scientific work at Bachelor's level.

According to the ASIIN criteria each degree programme must comprise a thesis/dissertation or final project which ensures that students work on a set task independently and at the level aimed for. In their statement, the Departments pointed out decidedly that the respective assessment methods in place (seminar along with presentation) as well as the design of the graduation projects in fact are equivalent to a thesis at the Bachelor's level of qualification. They additionally stressed that there already exist benchmark agreements with King Saud University as well as Quassim University, which both have their Bachelor's degree programmes accredited by ASIIN without having been asked for a Bachelor thesis in the meaning outlined above.

First of all, it may be concluded that if the Departments are convinced that the graduation projects do meet the set standard of a comprehensive scientific work, there seems to be

little reason to refer to accreditation procedures anywhere else in Saudi Arabia. The more so as in this regard, the ASIIN criteria are unmistakably clear (see citation above). Secondly, it must be stated, that peers of the mentioned accreditation procedures of course have also evaluated the graduation projects in the respective study programmes. And in doing this, in particular through an inspection of a sample of graduate works, they have come to the conclusion that these works basically do meet the standards with respect to the scientific topics, the depth and volume of work.

This, in turn, is exactly the point where peers of the actual accreditation procedure differ. In the course of their onsite inspection of exemplary graduation projects, they received the impression that these are limited works in scope and depth which do not yet meet the standard at the Bachelor's level of qualification. From their point of view, this result is evidently reflected in the ECTS points awarded for those projects. To be sure: The peers' assessment is referring to the average quality of a sample of project works they had the opportunity to study more closely, the possibility of single outstanding works notwithstanding.

In sum, the peers deemed it still necessary for all Bachelor's programmes to implement a capstone project including a written thesis comparable to international standards and to reasonably demonstrate its implementation (see below, chapter F, requirements, No. 1).

The peers appreciated the programme coordinators' argument concerning the assessment of the learning outcomes of each module/course as a whole. In the same vein, they highly valued the efforts demonstrated for this purpose. Since it is impossible to prove the combined effect of the hitherto existing and updated assessment methods, they considered the previously proposed recommendation in this regard still worthwhile. Peers of the reaccreditation procedure should particularly be concerned with that issue (see below, chapter F, recommendations, No. 4).

5. Resources

Criterion 5.1 Staff involved

Evidence:

- Respective chapter in the SAR
- Respective staff handbook (Annexes); also available on the internet: http://mu.edu.sa/sites/default/files/content-files/CSI%20Full%20CVs%202015.pdf (Ba Computer Science and Information); http://mu.edu.sa/sites/default/files/1/Zulfi/maths/Mathematics%20C.Vs_3.pdf

(Ba Mathematics); http://mu.edu.sa/en/colleges/college-science-al-zulfi/staffcv (Ba Physics) (Access: 15.04.2015)

- List of and information about research projects in the staff handbook
- Audit discussions with rectorate, programme coordinators and teaching staff

Preliminary assessment and analysis of the peers:
In principle, the information about the teaching staff available for the Bachelor's programmes is considered sufficient to assess whether the staff does have adequate qualification and experience in teaching and learning in order to run the programmes and to offer the qualification sought. It is thereby taken into account that the programme coordinators of the Bachelor's programme Computer Science and Information have published an updated version of the staff handbook in the follow-up of the audit visit. However, other than for the Computer Science and Mathematics programmes, the staff handbook of the teaching staff in the Physics programme unfortunately is only available in Arabic as far as more detailed information about the teaching and research experience is concerned. It therefore would be good to have meaningful short CVs about the teaching personnel also for this programme. The peers therefore asked the programme coordinators to submit an English version of the CVs of the staff for the Physics programme along with the statement to the audit report.

With reservations concerning the Physics programme, competence, composition and range of staff resources are deemed suitable to conduct the study programmes. The teaching staff's fields of expertise are sufficiently supportive to the structure and content of these programmes. This, of course, should be seen against the backdrop of a tight budgeting of the human resources policy.

Although the College of Science and its departments prove keen to consolidate its human resources and to broaden its scientific/research basis, committee work, teaching of fundamentals, and student counseling result in a mostly high workload of teaching staff. This leads, in turn, to time restrictions on research activities. Consequently, it generally affects the research strength of the departments and the College itself. Additionally, external lecturers are appointed for one year terms only which may also lead to negative long-term effects with a view to the development of a sustainable research basis. In this regard however, it has been noticed that approved lecturers normally will get their appointments extended, thereby constituting de facto a more or less homogeneous teaching staff over years.

Nevertheless, the level and quality of the programmes very much depend on the research basis of the College of Science and its teaching staff. As research-oriented work is among the best methods to train the capacity of creating new ideas and solving scientific prob-

lems independently, teaching in the study programmes would highly benefit from the further development of the research capacity. This would be particularly true for the envisaged Master's programmes supposed to build upon these Bachelor's programmes.

Closely connected to that, it is considered recommendable by the audit panel that especially in the Computer Science programme recruiting efforts should be focused on increasing the department's staff with a distinct academic and professional background in Computer Science rather than the current typical backgrounds in related engineering disciplines in order to ensure that up-to-date developments in the field are duly taken into account in research and teaching.

Criterion 5.2 Staff development

Evidence:

- Respective information in the SAR
- Capacity development offers / Further education
- Audit discussions with the teaching staff

Preliminary assessment and analysis of the peers:
Notwithstanding the above remarks about research opportunities, the peers found that the teaching staff of the College has ample opportunities for further developing their professional and teaching skills, and that the teaching staff uses these opportunities frequently and on a regular basis. They highly appreciated the great importance, the College and its departments respectively devoted to both the teaching and professional skills of the staff.

Criterion 5.3 Institutional environment, financial and physical resources

Evidence:

- Respective chapter of the SAR
- Special reports about the facilities and laboratories of the departments (Annexes CSI14, MATH14, PHYS14)
- Onsite inspection of the facilities and laboratories of the College of Science
- Audit discussions with the rectorate, programme coordinators, teaching staff and students

Preliminary assessment and analysis of the peers:
The institutional organization of the College of Science and its departments, the organizational processes and available resources satisfactorily support the attainment of the objectives of the degree programmes to be accredited. It is noteworthy that students agree with this assessment.

Both the teaching staff and the students are satisfied with the amount and quality of rooms, laboratories, equipment, and laboratory resources. The peers convinced themselves on a visit of the departments and their facilities of the modern and plentiful resources in rooms, laboratories and equipment. In particular, they highly appreciated the obviously very good online access on discipline-related data bases and literature and the remarkable textbook collection.

Though acknowledging the already ongoing research activities of individual professors and even inter-departmental research groups, the peers welcomed and strongly encouraged the College's strategy to follow this path and broaden those activities, especially with a view to the already planned Master's programmes. One way this could be achieved is through deepening the cooperation of the College and the university with other universities in Saudi Arabia and abroad. As to that, the audit team explicitly endorsed the visible efforts in this direction as well (see also chapter C-5.1).

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

The accreditation requirements with respect to personal, physical and financial resources were considered largely fulfilled.

The peers thanked the programme coordinators of the Physics programme for providing an English version of staff CVs. The information about the staff's qualification was considered satisfying. Competence, composition and range of staff resources was deemed suitable to conduct the Physics programme as well.

It has been said previously that research activities of the Departments offering the degree programmes should be improved (see above final assessment regarding criterion 3; see also below, chapter F, recommendations, No. 3). The Master's programmes, whose establishment apparently has made great progress, will not only significantly benefit from an improved research capacity but, in quality terms, will also be dependent on major developments in the research field.

With respect to the Computer Science programme, the peers confirmed the preliminary proposed recommendation that recruiting efforts should be focused on increasing the

department's staff with a distinct academic and professional background in Computer Science (see below, chapter F, recommendations, No. 7).

6. Quality Management: Further Development of Degree Programmes

Criterion 6.1 Quality assurance & further development
Criterion 6.2 Instruments, methods and data

Evidence:

- Respective chapter of the SAR
- Annual Programme Reports 2013/14 (Annexes CSI12, PHYS12, MATH12); available on the internet: http://mu.edu.sa/sites/default/files/CSI%20Annual%20Program%20Report.pdf (Ba Computer Science and Information); http://mu.edu.sa/en/colleges/college-science-al-zulfi/proram-anuual-report-measuring-learning-outcomes (Ba Physics), http://mu.edu.sa/sites/default/files/1/Zulfi/maths/Appendix%20MAth12%20Math%20Annual%20Program%20Report.pdf (Ba Mathematics) (Access: 15.04.2015)
- Information related to Quality Assurance on the internet (
- Audit discussion with the involved parties

Preliminary assessment and analysis of the peers:
Regarding the material presented in the SAR, the College of Science and the departments responsible for the study programmes pay much attention to seemingly all relevant aspects of quality assurance. In the first place, this commitment may be attributed to institutional as well as programme-related accreditation procedures the university and its institutional sub-units have undergone recently. The SAR in itself is pervaded with allusions to quality assurance, thus reflecting an understanding of quality assurance which is incorporated to the point of the departmental organization with its multiple committees as constitutive actors. Continuous assessment aiming at identifying strengths and weaknesses with respect to individual dimensions of quality as well as measuring the effectiveness of steering activities confirm a conscious utilization of the quality assurance approach.

Obviously, the College and the departments have put in place a number of quality assurance measures which, step by step, have been coordinated and interlocked or shall be integrated and adapted according to the needs of the HEI's quality assurance approach. Students and teaching staff consonantly confirmed that the diverse evaluation tools in the past have proved to be effective elements of quality assurance. Students, for instance, reported on measures concerning teaching and learning conditions or modifications in study or module content that had been initiated through critical comments of students in the course of evaluations. At this point, the student's participation and active involvement in developing and conducting the quality assurance of the programmes is particularly laudable. On general, the means for quality assurance have been found useful as a reliable benchmark for substantially checking whether the intended objectives are achievable and reasonable, and for identifying any failure in achieving those objectives.

This approach and its implementation, if perpetuated and routinely practiced in the everyday teaching and learning processes, could be called exemplary. There would have been very few things to raise a flag if not for the rather poor employment records of graduates which raised concerns about either the responsiveness of the programmes to the job market or the employability of the graduates. Since the programme coordinators couldn't provide convincing reasons for these results, they hardly could be expected to derive appropriate measures to counter them. Thus, the peers recommended analyzing reasons for unemployment of graduates and taking appropriate measures, in particular through involving external stakeholders.

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

The quality management system for the degree programmes under consideration was considered fully satisfying. It is without doubt that the QM system and instruments already in place provide for a very good basis for the quality development of the study programmes.

Further improvements which may be conceived with respect to the inquiry of possible reasons for unemployment and the plausibility of the allocation of credit points have been discussed in previous chapters of this report. Confirming an originally proposed recommendation is therefore in no way meant to limit the peers' full commitment to the Colleges' quality strategy but should rather support this QM approach through encouraging the HEI to further develop it (see below, chapter F, recommendations, No. 1).

7. Documentation & Transparency

Criterion 7.1 Relevant Regulations

Evidence:

- Law of Undergraduate Study and Examinations and Majmaah University Implementation Rules; available on the internet: http://mu.edu.sa/sites/default/files/1/Zulfi/maths/Appendix%20MAth12%20Math%20Annual%20Program%20Report.pdf (Access: 15.04.2015)
- Discipline Regulations at Majmaah University; available on the internet: http://mu.edu.sa/sites/default/files/1/Zulfi/csi/Discipline%20Regulations%20at%20Majmaah%20University%20finshed.pdf (Access: 15.04.2015)
- The Statute of the Council of the Higher Education and Universities; available on the internet: http://mu.edu.sa/sites/default/files/Appendix%20MU01%20The%20Statue%20of%20the%20Higher%20Educations%20%26%20Universities.pdf (Access: 15.04.2015)

Preliminary assessment and 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, courses and completion of the degree.

It has been noticed that some information about the programmes are inconsistent in the manifold documents which are made available and have also been published on the internet. University and departments should therefore consider reducing the range of documents relating to essentially the same information which simply complicates keeping the information universally up to date.

Criterion 7.2 Diploma Supplement and Certificate

Evidence:

- Programme specific samples of the Diploma Supplement for all degree programmes under review; also available on the internet: http://mu.edu.sa/sites/default/files/content-files/Computer_science_Diploma_NewPlan_2.pdf (Ba Computer Science and Information); http://mu.edu.sa/sites/default/files/content-files/Diploma_supplement-hh.pdf (Ba Physics);

http://mu.edu.sa/sites/default/files/content-files/diploma%20Supplement%20new.pdf (Ba Mathematics)

Preliminary assessment and analysis of the peers:
In the follow-up to the audit visit the university has provided programme-specific samples of the Diploma Supplement that are tailored according to the one commonly in use in the European Higher Education Area (EHEA). These samples contain information about the study objectives, the intended learning outcomes ("qualification profile"), the structure, level, content and status of the studies as well as the resp. workload of students. The Diploma Supplement of the Bachelor's degree programmes Physics and Mathematics also include information on the national Higher Education system, which – though referred to under chapter 8 – is missing in the sample for the Computer Science programme. Regarding this, it is assumed that the attachment normally will be added. The peers therefore thought it to be dispensable to ask once again for the Diploma Supplement of the Bachelor's degree programme Computer Science and Information.

With the Diploma Supplement conveyed to the graduates on a regular basis along with the final documents, potential stakeholders outside the university (potential employers or other HEIs, national and international, for instance) are able to assess and compare the individual final grade of graduates.

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

The requirements concerning the issues of documentation and transparency are fully met.

D Additional Documents

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

D 1. Ba Mathematics: Course description „Field training“

D.2 Ba Physics: Staff CVs in an English version (analogous to the Bachelor’s programmes Computer Science and Information and Mathematics)

E Comment of the Higher Education Institution (27.05.2015)

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

- Ba Mathematics: Course description „Field training“
- Ba Physics: Staff CVs in an English version (analogous to the Bachelor's programmes Computer Science and Information and Mathematics)

F Summary: Peer recommendations (09.06.2015)

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

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditaiton**
Ba Computer Science and Information	For one year with requirements	n/a	20.09.2020
Ba Physics	For one year with requirements	n/a	20.09.2020
Ba Mathematics	For one year with requirements	n/a	20.09.2020

Requirements

For all degree programmes

1. (ASIIN 4) The programme must encompass a capstone project including a written thesis comparable to international standards, wherein the student proves that he is capable to carry out an assigned research task independently and at the Bachelor level of qualification. Its implementation needs to be plausibly demonstrated.

For the Bachelor's degree programme Mathematics

2. (ASIIN 3.2) Mandatory student work has to be adequately represented within the credit point system. For all compulsory components of the programme credit points must be awarded (field training).

For the Bachelor's degree programme Computer Science and Information

3. (ASIIN 2.2, 2.6) The competences of students in the field of theoretical Informatics need to be enhanced.

Recommendations

For all degree programmes

1. (ASIIN 2.4, 3.2, 6.2) It is recommended to further analyse reasons for unemployment of graduates and to take appropriate measures, in particular through involving external stakeholders. Furthermore, the allocation of credit points should be monitored on a regular basis in order to take appropriate measures, if necessary.

2. (ASIIN 3.3) It is recommended to further encourage students' ability to work scientifically through adequate didactical means.

3. (ASIIN 3.1, 5.1, 5.3) It is recommended to extend the research activities in order to foster the adaptability of the programmes and the competences of students in highly volatile professional environments.

4. (ASIIN 4) It is recommended to further develop the assessment methods so as to better grasp the learning outcomes of the module as a whole.

5. (ASIIN 2.6) It is recommended to enlarge the interdisciplinary competences and application skills of the students, thus at the same time clarifying the occupational profile of graduates.

For the Bachelor's degree programme Computer Science and Information

6. (ASIIN 1) It is recommended to specify the "information" phrase in the name of the study programme.

7. (ASIIN 5.1) It is recommended that recruiting efforts should be focused on increasing the department's staff with a distinct academic and professional background in Computer Science.

For the Bachelor's degree programme Physics

8. (ASIIN 2.4, 3.3) It is recommended to transfer the Practical Training module to an earlier stage of the curriculum in order to better achieve the intended learning outcomes.

G Comment of the Technical Committees

Technical Committee 04 – Informatics/Computer Science (11.06.2015)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discussed the procedure. As the proposed modifications of the university concerning requirement 3 and recommendation 7 are not realized until now the Technical Committee considered both of them adequate to support the process. Regarding requirement 1 the Technical Committee deleted the last sentence. The first recommendation was split up in two recommendations. Furthermore the Technical Committee made minor editorial amendments to the wording of requirement 1 and recommendation 3.

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

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Computer Science and Information	For one year with requirements	n/a	20.09.2020

Proposed modifications/amendments regarding requirement 1:

1. (ASIIN 4) The programme must encompass a Bachelor thesis or a capstone project including a written thesis comparable to international standards, wherein the student proves that he is capable to carry out an assigned research task independently and at the Bachelor level of qualification.

Proposed modifications/amendments regarding recommendations 1 and 3:

1. (ASIIN 2.4, 3.2, 6.2) It is recommended to further analyse reasons for unemployment of graduates and to take appropriate measures, in particular through involving external stakeholders.

2. (ASIIN 6.2) It is recommended to monitor the allocation of credit points on a regular basis in order to take appropriate measures, if necessary.

3. (ASIIN 3.3) It is recommended to enhance students' ability to work scientifically through adequate didactical means.

Technical Committee 12 – Mathematics (08.06.2015)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discussed the procedure. It took note that the curriculum comprises modules concerning Islamic culture as compulsory components. As the respective module descriptions are not available for the Technical Committee it emphasized explicitly that the recommended resolution exclusively refers to the subject specific content. Thereby the Technical Committee assumed that content and objectives of the non-subject specific courses are not inconsistent with the Charta of fundamental rights of the United Nations as well as an unimpeded practice of free scientific work.

Furthermore the Technical Committee deemed the assessment of the peers as well as the proposed requirements and recommendations adequate. For a better understanding it suggested amending recommendation 3 as follows:

"It is recommended to extend the research activities of the teaching staff in order to foster the adaptability of the programmes and the competences of students in highly volatile professional environments."

The Technical Committee 12 – Mathematics recommended the award of the ASIIN seal as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Mathematics	For one year with requirements	n/a	20.09.2020

Proposed modification regarding recommendation 4:

4. (ASIIN 3.1, 5.1, 5.3) It is recommended to extend the research activities of the teaching staff in order to foster the adaptability of the programmes and the competences of students in highly volatile professional environments.

Technical Committee 13 – Physics (10.06.2015)

Assessment and analysis for the award of the ASIIN seal:

The technical committee discussed the procedure. As there is no obvious contend related connection between the analysis of reasons for unemployment among graduates and the review of the allocation of credit-points, the Technical Committee suggested verbalizing two recommendations (instead of one) for the respective topics.

In terms of the curriculum of the Bachelor Physics the Technical Committee deemed the recommended enlargement of interdisciplinary competences hardly possible. Thus it suggested deleting this claim from the respective recommendation.

Despite minor editorial modifications the Technical Committee deemed the assessment of the peers as well as the proposed requirements and recommendations in all other points to be adequate.

The Technical Committee 13 – Physics recommended the award of the ASIIN seal as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Physics	For one year with requirements	n/a	20.09.2020

Proposed modifications/amendments concerning recommendations for the Bachelor's Programme Physics:

Recommendations

1. (ASIIN 2.4, 3.2, 6.2) It is recommended to further analyse reasons for unemployment of graduates and to take appropriate measures, in particular through involving external stakeholders.
2. (ASIIN 6.2) It is recommended to monitor the allocation of credit points on a regular basis in order to take appropriate measures, if necessary.
3. (ASIIN 3.3) It is recommended to enhance students' ability to work scientifically through adequate didactical means.

4. (ASIIN 3.1, 5.1, 5.3) It is recommended to extend the research activities of the teaching staff in order to foster the adaptability of the programmes and the competences of students in highly volatile professional environments.

5. (ASIIN 4) It is recommended to further develop the examination methods so as to better grasp the learning outcomes of the module as a whole.

6. (ASIIN 2.4, 3.3) It is recommended to transfer the Practical Training module to an earlier stage of the curriculum in order to better achieve the intended learning outcomes.

H Decision of the Accreditation Commission (26.06.2015)

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

The Accreditation Commission discussed the procedure. In particular, it took a close look at the course descriptions for the Islamic culture modules.

Regarding this, the Accreditation Commission noticed that at least some of the learning objectives which have been defined for these courses are evidently inconsistent with the guiding principles of good scientific practice. It appears difficult to conceive how such phrases as “Differentiate between Islamic culture and other cultures and how to confront the intellectual invasion practiced by the enemies of Islam” or “Conclude the disadvantages of other cultures” could possibly encourage an independent and self-contained study process which is at the heart of any scientific reasoning. The principles of good scientific practice, in turn, figure prominently in the Mission statement and some of the more general learning objectives, the College of Science and the responsible Departments explicitly adhere to. The Accreditation Commission considered a requirement indispensable aiming at this inherent contradiction between learning outcomes and self-imposed scientific standards, which are also underlying chapter 1.1 of the ASIIN general criteria as well as the respective Subject-Specific Criteria (see below requirement No. 1).

Generally, the Accreditation Commission appreciated that the College of Science and the Departments responsible for the different study programmes have convincingly demonstrated their constructive attitude towards the indications and recommendations of the peers report. Regarding most of the below stated requirements and recommendations (see for instance requirement No. 4 (theoretical informatics) or recommendation No. 7 (name of the study programme Computer Science and Information)), the Departments’ proposals, as indicated in their statement to the report, could easily lead to satisfactory results, *if ultimately decided and implemented by the university*. Until then related requirements and recommendations must be maintained.

As to the recommended resolution stated below, the Accreditation Commission agreed to the suggestion of the Technical Committee 04 – Informatics/Computer Science to delete the last sentence of requirement No. 2 (Bachelor thesis; “Its implementation needs to be plausibly demonstrated.”) because it perceived this postulate to be self-evident.

Furthermore, the Accreditation Commission followed the assessment of the Technical Committee 13 – Physics that recommendation No. 6 (strengthening of interdisciplinary competences) doesn't reasonably apply to study programmes in Physics.

For the rest, the Accreditation Commission accorded with the recommended resolution of the peers and Technical Committees.

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

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Computer Science and Information	For one year with requirements	n/a	20.09.2020
Ba Physics	For one year with requirements	n/a	20.09.2020
Ba Mathematics	For one year with requirements	n/a	20.09.2020

Requirements

For all degree programmes

1. (ASIIN 1.1) The intended learning outcomes of the Islamic Culture modules must be in accordance with the College's commitment to international scientific standards as laid down in its own mission statement.
2. (ASIIN 4) The programme must encompass a Bachelor thesis or a capstone project including a written thesis comparable to international standards, wherein the student proves that he is capable to carry out an assigned research task independently and at the Bachelor level of qualification.

For the Bachelor's degree programme Mathematics

3. (ASIIN 3.2) Mandatory student work has to be adequately represented within the credit point system. For all compulsory components of the programme credit points must be awarded (field training).

For the Bachelor's degree programme Computer Science and Information

4. (ASIIN 2.2, 2.6) The competences of students in the field of theoretical Informatics need to be enhanced.

Recommendations

For all degree programmes

1. (ASIIN 2.4, 3.2, 6.2) It is recommended to further analyse reasons for unemployment of graduates and to take appropriate measures, in particular through involving external stakeholders.
2. (ASIIN 6.2) It is recommended to monitor the allocation of credit points on a regular basis in order to take appropriate measures, if necessary.
3. (ASIIN 3.3) It is recommended to enhance students' ability to work scientifically through adequate didactical means.
4. (ASIIN 3.1, 5.1, 5.3) It is recommended to extend the research activities of the teaching staff in order to foster the adaptability of the programmes and the competences of students in highly volatile professional environments.
5. (ASIIN 4) It is recommended to further develop the examination methods so as to better grasp the learning outcomes of the module as a whole.

For the Bachelor's degree programmes Computer Science and Information and Mathematics

6. (ASIIN 2.6) It is recommended to enlarge the interdisciplinary competences and application skills of the students, thus at the same time clarifying the occupational profile of graduates.

For the Bachelor's degree programme Computer Science and Information

7. (ASIIN 1) It is recommended to specify the "information" phrase in the name of the study programme.
8. (ASIIN 5.1) It is recommended that recruiting efforts should be focused on increasing the department's staff with a distinct academic and professional background in Computer Science.

For the Bachelor's degree programme Physics

9. (ASIIN 2.4, 3.3) It is recommended to transfer the Practical Training module to an earlier stage of the curriculum in order to better achieve the intended learning outcomes.

I Fulfilment of Requirements (01.07.2016)

Analysis of the peers and the Technical Committees

Requirements

For all degree programmes

1. (ASIIN 1.1) The intended learning outcomes of the Islamic Culture modules must be in accordance with the College's commitment to international scientific standards as laid down in its own mission statement.

Erstbehandlung	
Peers	fulfilled Statement: Peers acknowledge that the wording of the intended learning outcomes of the Islamic culture modules has been revised slightly so that they appear less offending against non-Islamic cultures. Principally, the course descriptions are considered as consequently stating what could be realistically expected and what might be judged, by and large, to be in line with international scientific standards as proclaimed in the College's mission statement. One auditor does not agree to this assessment insisting that politically and religious indoctrination is still prevailing throughout the descriptions which thus do not fit international scientific standards.
TC 04	fulfilled Statement: The Technical Committee agrees with the assessment of the peers.
TC 12	*not fulfilled* Statement: The Technical Committee discusses the procedure. Regarding the criticized wording of the Islam-related modules it takes a closer look at "Sal 101 Introduction to Islamic culture". The Technical Committee takes note that the expressions have been slightly modified. Nevertheless the dissemination of "disadvantages" of other cultures than the Islamic still remains a central objective of this teaching unit. The Technical Committee deems this approach still incompatible with the Education standards of the ESG and therefore assesses requirement 1 as not fulfilled. In all other aspects the Technical Committee follows the proposal for a decision of the peers and assesses requirements 2, 3 and 4 to be fulfilled.
TC 13	fulfilled

	Statement: The Technical Committee states that the descriptions of the Islamic-Modules have been revised in an acceptable manner. As the majority of the peers the Technical Committee therefore assesses requirement 1 as fulfilled.

2. (ASIIN 4) The programme must encompass a Bachelor thesis or a capstone project including a written thesis comparable to international standards, wherein the student proves that he is capable to carry out an assigned research task independently and at the Bachelor level of qualification.

Erstbehandlung	
Peers	fulfilled Statement: Peers notice that according to the module descriptions the value of the Bachelor thesis in terms of requiring students to individually carry out an assigned research task has been upgraded obviously. However, it still remains to be seen to what extent students are able to work scientifically, not least with respect to state-of-the-art technology and theory. In the light of this, the peers consider the requirement as fulfilled satisfactorily but suggest indicating to the HEI that it will have to prove evidence of the scientific quality of the Bachelor Theses in the course of the re-accreditation procedure (*see below, recommended additional comment to the HEI, Decision Accreditation Commission*).
TC 04	fulfilled Statement: The Technical Committee agrees with the assessment of the peers.
TC 12	fulfilled Statement: The Technical Committee agrees with the assessment of the peers.
TC 13	fulfilled Statement: The Technical Committee agrees with the assessment of the peers.

For the Bachelor's degree programme Mathematics

3. (ASIIN 3.2) Mandatory student work has to be adequately represented within the credit point system. For all compulsory components of the programme credit points must be awarded (field training).

Erstbehandlung	
Peers	fulfilled Statement: Peers come to the conclusion that all mandatory components of the study programme, and the field-training module in particular, are now being recognizable within the workload calcula-

	tion and credit point allocation.
TC 04	fulfilled Statement: The Technical Committee agrees with the assessment of the peers.
TC 12	fulfilled Statement: The Technical Committee agrees with the assessment of the peers.
TC 13	fulfilled Statement: The Technical Committee agrees with the assessment of the peers.

For the Bachelor's degree programme Computer Science and Information

4. (ASIIN 2.2, 2.6) The competences of students in the field of theoretical Informatics need to be enhanced.

Erstbehandlung	
Peers	fulfilled Statement: Peers consider the requirement fulfilled satisfactorily with the HEI providing evidence that it had strengthened the disciplinary field of theoretical informatics.
TC 04	*fulfilled* Statement: The Technical Committee agrees with the assessment of the peers.
TC 12	*fulfilled* Statement: The Technical Committee agrees with the assessment of the peers and the responsible Technical Committee.
TC 13	*fulfilled* Statement: The Technical Committee agrees with the assessment of the peers.

Decision of the Accreditation Committee (01.07.2016)

The Accreditation Commission agrees with the majority of the peers and the Technical Committees and considers all requirements fulfilled, principally. Nevertheless it decides to flag the implementation of the Bachelor thesis through an additional indication in the confirmation letter to the HEI.

The Accreditation Committee decides to extend the accreditation term as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Duration of accreditation
Ba Computer Science and Information	all requirements fulfilled*	n/a	30.09.2020
Ba Physics	all requirements fulfilled*	n/a	30.09.2020
Ba Mathematics	all requirements fulfilled*	n/a	30.09.2020

* The Accreditation Commission decides to add the following indication in the letter to the university:

„It is stressed that in the course of the reaccreditation procedure it will be checked whether the scientific quality of the Bachelor theses of the study programmes has been generally improved."