ASIIN Seal & Eurobachelor® Label

Accreditation Report

Bachelor's Degree Programmes
Applied Mathematics
Physics
Chemistry
Master's Degree Programme
Mathematics

Provided by
Al Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia

Female Campus

Version: 07 December 2018

Table of Content

A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for [1]	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC)[2]
Ba الرياضيات في العلوم بكالوريوس ريض – التطبيقية	Ba Applied Mathematics	ASIIN Seal	-	12
Ba بكالوريوس العلوم في الفيزياء – فيز	Ba Physics	ASIIN Seal	-	13
Ba – بكالوريوس العلوم في الكيمياء كيم	Ba Chemistry	ASIIN Seal, Eurobachelor® Label	-	09
Ma – ماجستير العلوم في الرياضيات ريض	Ma Mathematics	ASIIN Seal	-	12
Date of the contract: 27.07.2017 **Submission of the final version of the self-assessment report:** 28.03.2018 **Date of the onsite visit:** 02.-04.10.2018 **at: Riyadh**				
Peer panel: Prof. Dr. Claudia Cottin, Fachhochschule Bielefeld; Dr. Antonia Schöning, Nürnberger Lebensversicherung; Prof. Dr. Barbara Hahn, Hochschule Koblenz; Prof. Dr. Carla Vogt, Technische Universität Freiberg.				
Representative of the ASIIN headquarter: Dr. Martin Foerster				

[1] ASIIN Seal for degree programmes; Eurobachelor® Label: European Chemistry Label

[2] TC: Technical Committee for the following subject areas: TC 09 – Chemistry; TC 12 – Mathematics; TC 13 – Physics.

Responsible decision-making committee: Accreditation Commission for Degree Programmes	
Criteria used: European Standards and Guidelines as of 10.05.2015 ASIIN General Criteria, as of 10.12.2015 Subject-Specific Criteria of Technical Committee 09 – Chemistry as of 12.12.2011 Subject-Specific Criteria of Technical Committee 12 – Mathematics as of 09.12.2016 Subject-Specific Criteria of Technical Committee 13 – Physics as of 09.12.2016	

B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF[3]	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Ba Applied Mathematics	B.Sc.		6	Full time	-	8 Semester	240 ECTS/132 Credit Hours	Intake Autumn and Spring, 1st intake autumn 2005/06
Ba Physics	B.Sc.		6	Full time	-	8 Semester	240 ECTS/132 Credit Hours	Intake Autumn and Spring, 1st intake autumn 2005/06
Ba Chemistry	B.Sc.		6	Full time	-	8 Semester	240 ECTS/132 Credit Hours	Intake Autumn and Spring, 1st intake autumn 2011/12
Ma Mathematics	M.Sc.		7	Full time	-	4 Semester	120 ECTS/44 Credit Hours	Intake Autumn, 1st intake autumn 2014/15

For the Bachelor's and Master's degree programmes in (Applied) Mathematics the institution has presented the following profile in the self-assessment report:

„Training in every area of Mathematics is important and necessary, but the people who can learn on their own and apply their knowledge to new situations of practical importance have a distinct advantage over the others. Applied Mathematicians today are involved in a variety of practical activities, ranging from the creation of new theories to the analysis of scientific and managerial models. Therefore, while the job market is competitive for others, the demand for applied mathematicians who can combine mathematics with other disciplines is continuously increasing.

The Department of Mathematics at IMSIU was established with the objective that its undergraduate students upon graduation accommodate to the consistently growing demand of the job market in the Kingdom of Saudi Arabia and to effectively contribute to higher

[3] EQF = The European Qualifications Framework for lifelong learning

education system of the country. Since then the department has been offering B.Sc. degree, a large number of students have completed their B.Sc. in Mathematical Sciences from the department. Then, eight years after starting the BSc program, it was the suitable time for the department to enhance its fulfillments of the set objectives by offering a Master's degree Program in September, 2014."

For the Bachelor's degree programme Physics the institution has presented the following profile in the self-assessment report:

„The Physics program serves as a fundamental science underlying the study of all natural phenomena, i.e., knowing and understanding the fundamental laws of nature is important for all areas of scientific investigation. The elegant experiments and fundamental theories in Physics have provided much of the advancements in present-day science and technology. From the smallest subatomic particles to the vastness of cosmic expansion, and at the intermediate scales of our lives for solid-state electronics, superconductivity and physical events-Physics profoundly impacts our understanding of nature and our ability to harness its secrets for the progress of human kind."

For the Bachelor's degree programme Chemistry the institution has presented the following profile in the self-assessment report:

„The Department of Chemistry at the Al-Imam University offers the BSc degree of Science in Chemistry. Our students will have access to highly equipped laboratories to enjoy the fancy of science in chemistry. The classrooms in the department are established with all the latest educational technology facilities. Our faculty staff is from renowned universities of the word, in all the relevant fields of chemistry. Hence, our B.Sc. Degree in Chemistry offers you a strong background to build your professional career. The University avails medical services, hostels and state of the art recreation amenities at the campus.

Several universities in KSA have a good presence in the natural sciences, since their foundation. Consequently, our department offers fundamental roles in making IMSIU successful in its role as an anchor university in Riyadh. The Chemistry department has a clear and published mission statement that is appropriate for higher education and consonant with the mission and strategic priorities of the university and college. On the other hand, the Chemistry Department at IMSIU serves an essential role in maintaining the quality of various other programs outside of the Chemistry Department. All science and academic tracks should take one or more core courses in chemistry. It can be thought that the role of the

Chemistry Department is significant, since the foundational chemistry curriculum must be effectively completed in order to graduate.“

C Peer Report for the ASIIN Seal[4]

1. The Degree Programme: Concept, content & implementation

Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)

Evidence:

- Self-Assessment Report
- Programme Guide to each respective programme
- Programme Specification for each respective programme including Programme Learning Outcome Matrices

Preliminary assessment and analysis of the peers:
For all study programmes, the HEI presented a detailed description of general learning outcomes in the self-assessment report (SAR). The peers approve that for each programme a detailed presentation of learning outcomes is given in the SAR. They further confirm that the more detailed programme guides and programme specifications as well as the learning outcome matrices match the described learning outcomes with the respective modules of the programme. Thus, it is clear that all students in the Bachelor programmes shall have the basic knowledge in their respective disciplines and acquire the basis for life-long learning which enables them to continue their studies on a Master level after graduation. All graduates are enabled to work individually as well as in teams on practical and research projects; they possess presentation skills and have the ability to communicate their research results to the interested public. On a Master level the students shall deepen their knowledge in the respective field, specialize in certain areas and are enabled to continue their studies with PhD degree at local as well as international universities.

In the Bachelor programme Applied Mathematics graduates should be able to model real-world problems mathematically, possess the skill to solve applied mathematical problems

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

individually and to communicate the implicated concept orally as well as in writing to an interested public. In the Master programme of Mathematics, these competencies shall be further enhanced and specialized on individual fields of applied research allowing the graduates to pursue an academic research career in the form of a PhD programme. While the peers agreed that basically, these learning outcomes do describe the required competencies of academic Bachelor and Master programmes in (Applied) Mathematics, they pointed out, that the "applied" approach defined by the University is not sufficiently reflected in the respective programmes. Neither does it become sufficiently clear in the description of the learning outcomes, nor in the curricula as shall be discussed in more detail under criterion 1.3. For a better understanding of the programme objectives and the increasing of the programmes' attractiveness and public visibility, these descriptions should be improved reflecting the specialized approach of the programmes on Bachelor as well as Master level. The precise descriptions of learning outcomes for the other two programmes under review may serve as an example in order to revise the current descriptions. Nevertheless, during the discussions with the programme coordinators it became clear to the peers that the contents conveyed in both programmes are generally adequate with regards to the respective EQF levels 6 and 7. Consequently, it is mainly a problem of description, although – as will be discussed later on – the lack of content with practical application would also point towards a slight conceptual revision of the curriculum and course contents.

In the Bachelor programme Physics students are supposed to gain an understanding of the fundamental laws that govern the universe and a strong foundation of mathematical, analytical, laboratory, and written communication skills. Graduates should have a thorough quantitative and conceptual understanding of the core areas of physics, including mechanics, electricity and magnetism, thermodynamics, statistical physics, and quantum mechanics. They should further have acquired problem-solving skills and mathematical methods to approach, conceptualize, and achieve analytical or numerical solutions to physical problems. Overall, they should be able to think critically, know the contemporary areas of physics inquiry and present their own results in written and oral form to an interested public.

In the Bachelor programme Chemistry graduates shall have acquired a sound knowledge and understanding of chemistry and its applications to contemporary problems. They are experienced in the applications of chemical principles in various branches of chemistry and to a range of interdisciplinary applications including bioscience. Furthermore, they are able to analyse and solve problems, carry out experiments individually, communicate and present their findings in written and oral form as well as participate efficiently and constructively in teamwork.

In conclusion, the peers agreed that all programmes adequately reflect the ASIIN Subject-Specific Criteria as well as the EQF-level 6 for Bachelor programmes while the described

learning outcomes for the Bachelor in Applied Mathematics need to be reviewed and better adapted to the application-oriented specialization. However, as was outlined above, the peers agreed after the on-site-discussions that all programmes sufficiently reflect the respective EQF level. For the Chemistry programme the peers also declared that the criteria of the Eurobachelor® Label are met. The peers confirmed that the Bachelor Programme, concerning its intended learning outcomes, is in line with the Bologna Declaration and as such fulfils the criteria of the Eurobachelor Framework Standards.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report

Preliminary assessment and analysis of the peers:
The panel considered the names of the study programmes to adequately reflect the respective aims and learning outcomes, although the application-oriented focus of the Mathematics programmes should be further strengthened.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report
- Programme Guide to each respective programme
- Programme Specification for each respective programme including Programme Learning Outcome Matrices
- Course Specifications for each programme
- On-site-discussions

Preliminary assessment and analysis of the peers:
The curricula of all study programmes under review were being scrutinized by the panel in order to identify whether the described learning objectives can be achieved with the available modules.

The peers understood that for all science programmes the University has introduced a Preparatory Year a few years ago which is mandatory for most students. This was established in order to close the knowledge gap between the local High Schools and the level required at University. Consequently, the programme coordinators showed themselves convinced that a certain improvement has been achieved.

In the Bachelor programme of Applied Mathematics the students attend courses on calculus as well as introductory courses on natural sciences in Physics, Chemistry and Computer programming. Additionally, all students take courses in English and Islamic religion. The second year serves to deepen the mathematic-related topics, mathematical software as well as general physics. Again, these courses are supplemented by non-subject-related courses such as Arabic, History of Saudi-Arabia and Religion. Only in the third and fourth year specific aspects of pure and applied mathematics appear, including topics of cryptography and coding, simulation and modelling or numerical analysis. In a few elective courses, students have the opportunity to set focuses on current subjects. The programme is completed by a research project equal to the Bachelor thesis in the final semester but with a value of only 2 KSA credit hours. As was already discussed under criterion 1.1, the peers remarked that the presented curriculum as well as the described learning outcomes are suitable for a regular Mathematics programme, but that the laudable approach to Applied Mathematics was not always as recognizable as one could wish for. This became especially clear during the analysis of the module descriptions and final projects, where the application-orientation originally aimed for was often not sufficiently present. This aspect will be discussed in more detail under criterion 2.1.

In the Bachelor programme Physics the first study year is widely identical to the Mathematics programme. Students acquire knowledge in the main subject as well as general natural sciences combined with non-subject-related courses such as English and Religion. In the second year more physics-specific topic such as thermal physics, modern physics, electricity & magnetism, waves and optics are covered. Similarly, the third and fourth year allows for a specialization of the students and a further developing of subject-specific skills and competencies in modules such as quantum mechanics, mathematical physics, solid-state physics or computational physics. As are the other Bachelor programmes, the Physics programme is also concluded by a final project at a value of 3 KSA credit hours.

The Bachelor programme in Chemistry follows the same structure as the previous two programmes. While in the first year students are acquainted with a general knowledge in natural sciences, specific aspects of chemistry are being covered in the second and third year including the subjects of organic and inorganic chemistry, physical chemistry, electrochemistry, quantum chemistry and others. The final year offers the opportunity for an individual

specialization in two elective courses in the area of applied chemistry before the final project of 2 KSA credit hours in the last semester concludes the study programme.

The Master programme in Mathematics consists of a variety of core courses and elective courses out of which students can choose their specialization. In the field of the core courses, the students have to pass, among others, modules in Algebra or Numerical Analysis while three electives allow to choose between courses such as Applied Functional Analysis, Mathematical and Computational Modelling or Differential Geometry. The programme is concluded by a research project of 4 KSA credit hours.

In conclusion, the peers realized that the programmes under review consist of mostly up-to-date curricula, especially in the Physics and Chemistry programmes, but also in the Mathematics programmes with the restrictions previously discussed. As was outlined, the application competencies, especially in Mathematics, hold the potential to be developed further. Discussion with industry representatives confirmed that graduates possess a high level of theoretical knowledge but are restricted in their practical application. A further emphasis of hands-on-approaches and the involvement of real-life-problems and projects posed by the industry may help to prepare students more sufficiently for the labor market and may increase the employability that is still limited for graduates of the reviewed programmes, especially within the (Applied) Mathematics programmes. In these programmes, the inclusion of more than one programming language and the application of theoretical problems in a real-life environment will present a significant improvement.

The peers established that in most programmes students may choose between a few electives in order to set focuses but that the number of these electives is not always very high. Thus, the students oftentimes are only able to choose from a very small number of electives that are actually offered. The peers encourage the programme coordinators to further increase the number of these electives and to make individual choices possible in order to allow for a greater flexibility among the students. They deem it also important that the content of the electives offered is made transparent to the students through module descriptions, which are made available before the beginning of the semester. This way, students will have a better possibility to design their individual curriculum.

With regards to the quality of the Bachelor and Master theses and their defense, the peers understand that the size and scope of the projects is measured only in KSA credit hours which solely take into consideration the contact hours a student has during the preparation of the project. Consequently, they had the impression that in several cases, the academic level of the projects was not as high as is generally envisioned by the university and that the lack of a clear timeframe is one of the reasons for this shortcoming. The measurement of the workload will be discussed below. Most final projects that the peers revised failed to

demonstrate the students' ability to work individually on an academic level. Literature research and academic writing and analysis should be strengthened as much as the description and evaluation of practical projects carried out by the students. These skills could be improved through the introduction of specific courses on academic reading and writing as well as an extension of the final projects themselves. At the female campus another special difficulty was the limited access to adequate laboratory equipment which will be discussed later on.

Criterion 1.4 Admission requirements

Evidence:

- Self-Assessment Report
- Programme Guide to each respective programme
- On-site-discussions

Preliminary assessment and analysis of the peers:

For a few years now admission to the Bachelor programmes at Universities in Saudi-Arabia is regulated by the government in the form of a national entrance exam which is independent from High school results in order to ensure an average national quality level. Following the results of the entrance exam students choose Universities and programmes but at Science College of Al Imam University all Science students first enter a Preparatory year that was established a few years ago. Although this has resulted in an improvement of the students' performance, it also brings with it the difficulty that students only choose their finale degree programme after completing the Preparatory year. This choice is made based on a combination of the High school exam and the individual performance in the first year and often leads to a preference of other science-related subjects that enjoy higher prestige in the Kingdom, such as Medicine, Engineering or Informatics. Consequently, according to the programme coordinators, the programmes under review have to face the issue that a high percentage of their students does not follow this path because of interest or ability but only because their results were not good enough to study any of the more prestigious careers. Thus, the knowledge level of many students is still not as high as would be desirable and teaching staff often has to adapt the course content to this level. Nevertheless, the peers pointed out that for the female programmes this problem is less serious as for the male versions since no female engineering programmes are available.

For the Master programme in Mathematics, students should have a Bachelor's degree in Mathematics with a GPA equal or equivalent to 3.75 out of 5. Then, applicants have to pass an entry exam set by the Mathematics Graduate Committee and need to score at least 400

at a TOEFL test or an equivalent test. The peers considered these regulations adequate to ensure a sufficient knowledge level of the applicants.

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

Following the HEI's comments and additionally provided material the peers were pleased to see, that the curriculum in the Bachelor programme Applied Mathematics is currently undergoing a certain modification that was already planned for the Fall semester 2018 but was unfortunately delayed. The HEI presented a reviewed Programme Specification that clearly outlined a stronger application orientation in the curriculum. Similarly, the programme objectives were revised including the indicated stronger focus on the application aspect. Consequently, based on the provided material, the peers agreed that many of their remarks were already considered and implemented.

Further, the research project course in the Bachelor in Applied Mathematics was enlarged in the revised curriculum from 2 to 3 credit hours while the private study load was raised to 9 hours, in order to improve reading and writing skills of the students. The significance of scientific research and analysis was also outlined in the reworked module description. While the peers consider these improvements to be very helpful, they emphasized, that the improvement of the final projects of both Bachelor and Master programmes in Mathematics need to be enhances in the long term. If the indicated changes help to achieve this should be part of the consideration during a re-accreditation.

Concerning the offer of elective courses the HEI informed the peers that in the new curriculum for the Bachelor programme in Applied Mathematics three electives are included. For each of these electives the students can choose from an offered list that will be presented an adequate time before the start of the semester. This seems to be a step into the right direction in the eyes of the peers. Nevertheless, they emphasize the importance of an increased offer of electives not only for the Bachelor in Applied Mathematics but in all Bachelor programmes. In a longer period this offer should be continuously developed.

Consequently, the peers agree that the HEI has already followed several of their recommendations and considers the criterion to be largely fulfilled.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Self-Assessment Report
- Programme Guide to each respective programme
- Programme Specification for each respective programme
- Course Specifications for each programme
- On-site-discussions

Preliminary assessment and analysis of the peers:
All study programmes under review are divided into modules, which comprise a sum of teaching and learning. In general, the panel found the structure of the modules to be adequate and manageable.

An issue identified by the peers and discussed with all stakeholders was that many courses were taught in English. Although the peers understand that the education in English will very much increase the employability of the students, they also see that the combination of English lectures at the early stages of the programmes and the conveyance of subject-specific contents is a challenge to many students that leads to an extension of the regular study duration. Especially during the first year students have to follow introductory courses while getting acquainted with the English language and must attend non-subject-related courses. In order to further facilitate the English learning and teaching process the peers think it worthwhile to consider a reduction of the non-subject-related courses in favour of additional English courses that will help to prepare the students for the challenge of studying completely in professional English.

As was already outlined, all programmes offer, to a certain degree, electives whose limited number allows a reduced specialization of the students. The peers welcome the recent developments but encourage the coordinators to increase the number of possible choices although they understand that with a small number of students not all electives can be offered each semester. Practical elements are offered in many modules of all programmes and ensure a certain practice-orientation although it was already pointed out that, especially in the Applied Mathematics programme, this practical application could still be enhanced. Especially in the context of the final projects or Bachelor theses, the programme in Physics has demonstrated that a closer cooperation with industry partners may prove successful in this regard. From this programme the peers learned that many students develop their final projects during internships in the final semester leading to better results and higher employability of the graduates. The peers highly approve of this development

and encourage the coordinators of the other programmes and especially in Applied Mathematics to search for likewise opportunities that will bring students into contact with real-life problems.

The modules in all programmes vary from 1 to 4 credit hours totalling to a number of 132 credit hours in the Bachelor programmes and 44 credit hours in the Master programme. The credit hours are more or less evenly distributed throughout the semesters ranging from 14 to 18. The peers understand that the calculation of credits in the Kingdom does not relate to the actual workload that a student may invest in a specific module. Moreover, the calculation is predominantly based on the number of contact hours a student spends in the classroom together with a member of the teaching staff. In the eyes of the peers, this leads to a certain difficulty when assessing the quality of the Bachelor and Master theses that are valued only at 2 or 3 credit hours in the Bachelor and 4 credit hours in the Master programme. During the discussions with the coordinators and teaching staff the peers learned that the time students spend with researching and preparing the final project does not count and remains generally open to the students' dedication. After reviewing several of the final projects the peers concluded that such a calculation apparently leads to very heterogeneous outcomes with laudable results in the Chemistry and Physics programmes but with weaknesses in the Applied Mathematics programmes. Although other reasons for this discrepancy were already outlined before, the peers detected a certain shortage in the skills of research and academic writing. Consequently, the introduction of additional preparatory courses for these skills or at least an extension of the final project emphasizing the importance of the project may help to improve the outcome.

Apart from the shortcomings described above the peers agreed that both practical experience as well as academic depth generally support the learning progress of the students and that the programmes' structure is adequate to achieve the previously defined learning outcomes.

International mobility at Al Imam University is still developing. The peers appreciate the general commitment of the University with regard to furthering its internationalization that becomes apparent in the teaching of English in all degree programmes as well as the high internationality of the teaching staff. Students are generally encouraged to spend some time abroad although this is still limited to summer schools or internships. Spending a whole semester at another University outside the Kingdom is theoretically possible but not executed by any of the students, partly because of social and cultural differences, partly because of missing bilateral agreements with other institutions that would allow for a mutual recognition of credits. The peers understand that such developments need time but encourage the University and the College of Sciences to continue its way towards this direction for the benefit of all stakeholders.

Criterion 2.2 Work load and credits

Evidence:

- Self-Assessment Report
- Programme Guide to each respective programme
- Programme Specification for each respective programme
- Course Specifications for each programme
- On-site-discussions

Preliminary assessment and analysis of the peers:

As was outlined above all modules are assigned with credit hours amounting to 14 to 18 credit hours each semester. Consequently, the credits are more or less equally distributed over eight semesters. Saudi credit hours do not count the actual workload of the students but only estimate the envisaged time spent in classes, in laboratories and during self-study. Although this estimation seems to be genuine in many cases, the peers learned from the on-site-discussions that this is not always the case and that especially in the case of the final projects the calculation of workload is largely disconnected from the number of awarded credits. The students mentioned during the discussion that they do realize that there are several courses that require a much higher workload than others although they are valued at the same number of credit hours; special problems were mentioned in physics in the cases of quantum mechanics and electronics and in Chemistry in Heterocyclic Chemistry in the 5th Semester. The peers clearly understand that there are certain courses that require more student input than others do and which are also considered very difficult by the students. Nevertheless, they emphasize that the actual student workload should be continually assessed in order to avoid peaks leading to an extension of the regular study duration and to ensure that the programmes can be studied successfully within the given time. If deviations from the estimated workload are detected, either the content of the course should be reviewed or the number of credit hours awarded to the courses should be adapted to reality. In the case of the final projects the peers strongly recommend to define an expected indicator of invested time, words, etc. to enhance the comparability of the students' results in addition to the credit hours that are not related to the actual student input.

Criterion 2.3 Teaching methodology

Evidence:

- Self-Assessment Report
- On-site-discussions

Preliminary assessment and analysis of the peers:

It has already been outlined that teaching in the four programmes includes theoretical foundations as well as practical work, which was welcomed by the peers. In general, teaching includes lectures, classroom exercises, tutorials, group exercises, laboratory work, as well as group work and individual projects. Not common are seminars that offer the students a platform to discuss research results, present projects to the class, and prepare students for the challenges of academic research and writing. It was already mentioned that, according to the peers, such courses would help to enhance the academic level of the final projects. Furthermore, the participation of industry representatives still leaves room for improvement, especially in the Applied Mathematics programmes. From the data presented in the self-assessment report and the discussions during the on-site-visit, the peers learned that only a comparatively small number of graduates in these programmes finds immediate employment related to their study degree. From the discussion with the industry representatives, the peers had the clear impression that a gap exists between the sound theoretical education students receive at University and the practical skills employers require. Consequently, employing local graduates requires a long time and investment on part of the company to prepare the former students for the actual needs of the job while hiring foreigners is often the cheaper solution. As the Saudi Vision 2030 envisages a higher employment rate of Saudi nationals it should be a priority for the programmes to get into close contact with the industry and to establish what is required by them.

Criterion 2.4 Support and assistance

Evidence:

- Self-Assessment Report
- Audit discussions

Preliminary assessment and analysis of the peers:

The peers had a very good impression of the offers related to support and assistance of the students at the Science College. The students confirmed that the teaching staff is always available to any questions and supports the students in every possible way. Similarly, a student council is currently developing and participating in the advisory committees of the College and the University level. Thus, the student participation in the HEI development will further increase in the future. Students are offered rooms for recreation on campus

and a high number of students is supported through government scholarships. Information about the courses, modules and study programmes in general are accessible online or are given to the students at the beginning of each semester. During the on-site-visit, the students expressed the wish to study abroad and to have more opportunities in general to participate in the internationalization process. The peers learned that there is a governmental programme sending students abroad during the PhD programmes but this is not exclusively linked to the university. However, students would actually like to spend some time at a foreign university even during the Bachelor programmes, especially given the focus of the programmes on the English language.

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

Concerning the co-operation with industry representatives in research projects the HEI announced that in future the Head of each department should "Reinforce and mainstream the experience of the Physics Department in the openness to the research and industrial institutions. Expand this experience to all departments towards College's partnership and collaboration that are economic prosperity, social inclusion College opportunity." This is considered to be a good approach the success of which will be discussed during a re-accreditation procedure.

In conclusion, the peers underline the importance of the assessment of student workload as well as the definition of a procedure to constantly supervise the workload. Especially for the graduation projects, an expectation of the invested workload needs to be defined in order to ensure a comparable quality level. Consequently, the peers consider this criterion to be partly fulfilled.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Self-Assessment Report
- Programme Guide to each respective programme
- Programme Specification for each respective programme
- Course Specifications for each programme

- On-site-discussions

Preliminary assessment and analysis of the peers:
Each course-content in the reviewed study programmes is reflected in exams, which are distributed in three examination periods/types during the semester: each course has a mid-term exam and a final examination while students have to pass a number of smaller tests or quizzes during the semester. The consequent high amount of exams during one semester was not considered problematic but helpful by the students since it allowed for a continuous evaluation of each student's individual achievement. Re-sit regulations are generally in place but usually only apply to those students that cannot attend the final examination for health or other reasons. If a student fails a course in total (she does not have to pass each exam individually), she will have to repeat the whole course in the following semester or during the summer if the lecturer offers the course. Although the peers agree that students that fail a course should repeat the whole content and not only the exam, they also point out that the high number of students exceeding the regular study duration and the quite strict re-sit regulations may be coincidental. If a student has to repeat the whole course, she will most likely spend less time on other courses and thus lag behind her original study plan. Consequently, the peers suggest thinking about a middle way between both extremes; one option could be to allow a repetition of the final examination to those students who have achieved a certain number of points during the semester in the quizzes and mid-term exams.

The peers checked a variety of exams and agreed that they generally represented an adequate level of knowledge as required by the EQF-Level 6 and 7. However, as has been discussed before, the scientific work presented in the Bachelor and Master theses in Mathematics was not always at an appropriate level. It appeared that skills in individual research, discussion of literature and analysis of experimental results could still be enhanced. The peers encouraged the programme co-ordinators to strengthen these aspects in the form of a seminar and through a generally stronger emphasis on the quality requirements of the final projects.

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

The peers consider this criterion to be completely fulfilled.

4. Resources

Criterion 4.1 Staff

Evidence:

- Self-Assessment Report
- Teaching staff CVs
- On-site-discussions

Preliminary assessment and analysis of the peers:

Along with the information in the self-assessment report the HEI presented lists of staff members and their research areas for all study programmes. On this basis, the peers realized a certain discrepancy between the quantity and structure of the male and the female teaching staff. In the female branches, the number of full professors is not nearly as high as in the male branches, which leads to a higher number of assistant professors and other lecturers that have a significantly higher workload than full professors. The peers learned that some courses are offered by male lecturers through digital media. Though this generally works fine, when it comes to the supervision of graduate projects the peers emphasized that the personal immediate contact between teacher and student is of great importance. At the moment, the current composition of the female teaching staff leads to a high overload for the few female professors that can supervise the graduate projects. This inequity should be reduced in the next years. Furthermore, the peers detected that the quantity of the female teaching staff is not sufficient in the Applied Mathematics programmes, especially concerning the provision of access to computer workspaces, etc. Currently, female students cannot enter computer labs at any time during study hours and work on their project which leads to deficits in the conveyance of the required application skills

Apart from these issues, the peers were generally impressed by the great dedication as well as the constantly growing academic qualification of the female staff. They understand that it is much more difficult to reach the same level of internationality at the female campus than on the male campus but they appreciate how female professionalization is developing in the Kingdom and the Science College and they support the University in its policy of equal academic qualification.

Criterion 4.2 Staff development

Evidence:

- Self-Assessment Report
- On-site-discussions

Preliminary assessment and analysis of the peers:
The offers concerning staff development mainly focus on the internationalization and international visibility and qualification of the staff members. Hence, the University offers a lot of support to further develop the research opportunities and to increase the number of academic publications. Staff members receive extra payment for publications and mobility offers exist to enable staff members to spend time abroad doing research; this is especially emphasized for the young colleagues doing their PhD.

Criterion 4.3 Funds and equipment

Evidence:

- Self-Assessment Report
- Audit discussions
- On-site-visit

Preliminary assessment and analysis of the peers:
The College of Science and the programmes under review are currently undergoing a substantial development process in terms of laboratories and equipment but while the female campus was supposed to be finished a short time ago the peers still detected some deficiencies regarding the laboratory equipment. In the Bachelor programmes they admonished that the equipment available is generally suitable to provide students with the most basic knowledge in introduction but that they would hardly be sufficient to allow for the development of advanced projects or individual research such as would be required in a final graduation project. Hence, the peers were not too surprised to see that most graduate projects were of rather limited quality since the equipment for any more elaborate projects was not available. The peers understood that it is generally possible for the female students to visit the male laboratories on Saturdays when no male students are there but this is not an acceptable condition given the College's mission to allow for equal academic education. Female students should have access to the same equipment as male students not only once a week but also every day. And not only for the graduation projects of the students is it important to provide adequate equipment but also for the research projects of the teaching staff. Since the attraction of foreign female teachers is difficult, as was outlined before, female programmes need to recruit most of their staff from among their own graduates and the further qualification of staff members should have a high priority. The continuation of this qualification process will only be possible if female researchers can access the equipment and laboratories required at any time.

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

The peers appreciate that the HEI agrees with their assessment of the importance of constant improvement of the availability of Computer Software. They understand, that the University has set for itself the task to "provide specialized software (for example Matlab, Maple, Mathematica,…) applications available to both staff and students for their own devices on campus, through the software database licensed from home use with special terms and condition." Improvement with regards to this self-defined proposition will be reviewed during a re-accreditation procedure.

Concerning the development of staff and equipment in the female branches of the programmes the peers appreciate the HEIs' information that in the light of the vision of the Kingdom of 2030, especially in the context of the empowerment of women, the University has taken important steps, the latest of which has been the extension of working hours for the female branch. Currently, the University administration is starting to implement a variety of actions, with the objective, to facilitate the access for both students and teaching staff (from the female branch) to benefit fully from the resources, in particular the scientific and research laboratories and the central library and other equipment and facilities, as an important part of the continuous development and improvement of the University educational environment. However, for the accreditation this process needs to be ensured and consequently documented apart from the general willingness to improve the situation.

In conclusion, the peers consider this criterion to be partly fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Course Specifications for each programme

Preliminary assessment and analysis of the peers:

The peers appreciated the module descriptions presented beforehand with the self-assessment report. For all courses descriptions were made available and are also made accessible to the students. They give full information about the courses, examinations, contents, learning outcomes and recommended literature.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Self-Assessment Report

Preliminary assessment and analysis of the peers:
Students receive a diploma after completion of their respective degree programme but this document was not made available to the peers yet. They consequently requested that an exemplary version of the diploma or Transcript of Records will be presented in the aftermath of the on-site-visit.

Diploma Supplements are not issued in Saudi-Arabia, as the Kingdom is not part of the European Higher Education Area. However, the peers underline the relevance of issuing such documents that outline the structure and content of the degree programme as well as the individual achievements of the graduate. This might help to increase the employability of the students in an international environment and improve the visibility and acceptance of Saudi degrees at international companies.

Criterion 5.3 Relevant rules

Evidence:

- Self-Assessment Report and Annexes
- Audit discussions

Preliminary assessment and analysis of the peers:
The peers realized that regulations for every important aspect of student life and the respective degree programmes have been issued by the HEI and are accessible to the students through the University website. During the discussion with the students, it became clear that all participants knew perfectly well where to find any regulations or whom to contact if any additional information was required.

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

Exemplary versions of the Diploma documents were provided by the HEI in the aftermath of the on-site-visit. Consequently, the peers consider this criterion to be completely fulfilled.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Self-Assessment Report
- Audit discussions

Preliminary assessment and analysis of the peers:
The aspect of quality assurance was thoroughly discussed with all stakeholders during the on-site-visit and the peers learned that the University has installed a thorough quality assurance strategy with a variety of feedback loops and stakeholders involved. The students as well as the teachers are evaluating courses on a regular basis. All data collected are compiled in a yearly report and are analysed centrally. Afterwards the results are returned to the department level and the respective teaching staff members who then act accordingly in order to achieve a continuous improvement of teaching and learning.

While the students confirmed that they are regularly asked about the quality of the programmes and the courses they also mentioned that they did not really feel well-informed about the consequences of their remarks. They give their feedback at the end of each course and do not find out if anything they criticize has ever been improved. However, the peers pointed out that students should be made aware of the importance and outcome of their contribution, otherwise they would lose interest or feel not taken seriously.

Consequently, the peers saw two aspects that could be worked on in the future in order to further enhance the quality assurance system. First, student participation in the committees that analyse the yearly reports and discuss any consequences or actions that may follow them could be introduced. As far as the peers understood, the student council is currently not represented in these committees and only participates in an advisory committee. It could be helpful to have the students participate in the immediate decision-making council. The second option is to discuss the results of each individual course evaluation between teachers and students. The teachers should receive the results of the students' evaluation for their own courses, then go back to the class, and discuss these results with the whole group. Thus, if students criticize certain things the teacher has the possibility to explain immediately why she did things this way or another and to announce what she wants to change about it in the future. This way, students will feel taken seriously and get an impression of the importance and the consequences of their remarks.

Another important point was the establishment of an alumni network in order to ensure constant feedback on the programmes and students' employability after graduation. During their visit, the peers learned that such a network is already under construction and they support the University and College in this process. One thing will be a regular alumni survey in order to gather adequate data about graduates' success, another thing is to involve the graduates individually in the further development of the programmes' quality. Especially in programmes such as Applied Mathematics where the peers detected a certain gap between academic education and professional work life the involvement of graduates in form of visits, guest lectures or networks for internships may prove invaluable to present the students with an insight into the job opportunities and practical approaches their programmes offer.

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

The peers consider this criterion to be largely fulfilled.

D Additional Documents

Before preparing their final assessment, the panel asks 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. Exemplary Graduation Diploma / Transcript of Records~~

E Comment of the Higher Education Institution (11.11.2018)

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

- Final version of SAR (after correcting some typo mistakes).
- Program specification of the new curriculum of Bachelor degree in Applied Mathematics.
- Program specification of the new curriculum of Bachelor degree in Physics.
- Exemplary Graduation Diploma and Transcript of Records for each program

F Summary: Peer recommendations (21.11.2018)

Taking into account the additional information and the comments 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 Applied Mathematics	With requirements for one year	-	30.09.2024
Ba Physics	With requirements for one year	-	30.09.2024
Ba Chemistry	With requirements for one year	Eurobachelor®	30.09.2024
Ma Mathematics	With requirements for one year	-	30.09.2024

Requirements

For all programmes

A 1. (ASIIN 2.1; 2.2) Student workload must be continuously assessed and a process has to be established to supervise the alignment of awarded credits and the actual student workload. Especially for the graduation projects, an expectation of the invested workload needs to be defined.

A 2. (ASIIN 4.3) An investment plan has to be presented how the equipment of the female laboratories will be enhanced to a degree as to allow for the production of high-quality graduate projects without using the male equipment.

Recommendations

For all programes

E 1. (ASIIN 1.3) It is strongly recommended to further enhance the academic level of the final projects by strengthening the students' skills in scientific work and research and their ability to work independently on their projects.

E 2. (ASIIN 4.1) It is strongly recommended to reduce the workload of the female staff insofar as to allow for the supervision of female graduate projects through female supervisors.

E 3. (ASIIN 4.3) It is strongly recommended to improve the availability of research labs for the female students and staff members.

E 4. (ASIIN 2.1) It is recommended to increase the number of courses in subject-specific English in favor of other, non-subject-specific courses.

E 5. (ASIIN 1.3) It is recommended to broaden the offer of elective courses and to increase the transparency of the courses offered for the students.

E 6. (ASIIN 2.1; 6) It is recommended to improve the co-operation with industry representatives, gathering feedback from employers and establishing contacts for student internships.

E 7. (ASIIN 6) It is recommended to establish an alumni network to receive graduate feedback, contacts into industry and to collect reliable data about the long-term success of the programmes.

E 8. (ASIIN 6) It is recommended to further enhance the participation of student representatives in the College administration and programme development.

E 9. (ASIIN 6) It is recommended to inform students about the consequences resulting from student evaluations and to discuss course evaluation results with the class in order to ensure an immediate feedback and active participation of the students.

For the Ba and Ma (Applied) Mathematics

E 10. (ASIIN 4.1) It is recommended to increase the number of female staff as to ensure accessibility of female students to computer workspaces.

G Comment of the Technical Committees

Technical Committee 12 - Mathematics (23.11.2018)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and generally agrees with the assessment of the peers. Concerning the availability of research labs for female students and staff the members emphasize the importance of this aspects and recommend to change E3 into a requirement (now A3).

The Technical Committee 12 – Mathematics recommends the award of labels as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Applied Mathematics	With requirements for one year	-	30.09.2024
Ba Physics	With requirements for one year	-	30.09.2024
Ba Chemistry	With requirements for one year	Eurobachelor®	30.09.2024
Ma Mathematics	With requirements for one year	-	30.09.2024

Technical Committee 13 – Physics (November 2018)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and agrees with the assessment of the peers.

The Technical Committee 13 – Physics recommends the award of labels as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Applied Mathematics	With requirements for one year	-	30.09.2024
Ba Physics	With requirements for one year	-	30.09.2024
Ba Chemistry	With requirements for one year	Eurobachelor®	30.09.2024

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ma Mathematics	With requirements for one year	-	30.09.2024

Technical Committee 09 - Chemistry (21.11.2018)

Assessment and analysis for the award of the ASIIN seal:

The TC discusses the procedure and underlines that the issuing of a Diploma Supplement should be a requirement following the ASIIN regulations. Furthermore, the previous E8 concerning the students' ability to work academically should be made a requirement because of its foremost importance.

Assessment and analysis for the award of the Eurobachelor® Label:

The TC is of the opinion that the targeted learning outcomes do not yet fully meet the expectations of the ECTN and that therefore the Eurobachelor label can only be awarded once the requirements are adequately fulfilled.

The Technical Committee 09 – Chemistry recommends the award of labels as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Applied Mathematics	With requirements for one year	-	30.09.2024
Ba Physics	With requirements for one year	-	30.09.2024
Ba Chemistry	With requirements for one year	Eurobachelor® after fulfilment of requirements	30.09.2024
Ma Mathematics	With requirements for one year	-	30.09.2024

Requirements

A 1. (ASIIN 2.1; 2.2) Student workload must be continuously assessed and a process has to be established to supervise the alignment of awarded credits and the actual student workload. Especially for the graduation projects, an expectation of the invested workload needs to be defined.

A 2. (ASIIN 4.3) An investment plan has to be presented how the equipment of the female laboratories will be enhanced to a degree as to allow for the production of high-quality graduate projects without using the male equipment.

A 3. (ASIIN 4.3) The availability of research labs for the female students and staff members must be ensured. (Proposed by TC 12, previous E 3))

A 4. (ASIIN 1.3) The academic level of the final projects must be further enhanced by strengthening the students' skills in scientific work and research and their ability to work independently on their projects, including a written thesis comparable to international standards.

Recommendations

For all programmes

E 1. (ASIIN 4.1) It is strongly recommended to reduce the workload of the female staff insofar as to allow for the supervision of female graduate projects through female supervisors.

E 2. (ASIIN 2.1) It is recommended to increase the number of courses in subject-specific English in favor of other, non-subject-specific courses.

E 3. (ASIIN 1.3) It is recommended to broaden the offer of elective courses and to increase the transparency of the courses offered for the students.

E 4. (ASIIN 2.1; 6) It is recommended to improve the co-operation with industry representatives, gathering feedback from employers and establishing contacts for student internships.

E 5. (ASIIN 6) It is recommended to establish an alumni network to receive graduate feedback, contacts into industry and to collect reliable data about the long-term success of the programmes.

E 6. (ASIIN 6) It is recommended to further enhance the participation of student representatives in the College administration and programme development.

E 7. (ASIIN 6) It is recommended to inform students about the consequences resulting from student evaluations and to discuss course evaluation results with the class in order to ensure an immediate feedback and active participation of the students.

For the Ba and Ma (Applied) Mathematics

E 8. (ASIIN 4.1) It is recommended to increase the number of female staff as to ensure accessibility of female students to computer workspaces.

H Decision of the Accreditation Commission (07.12.2018)

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

The Accreditation Committee discusses the procedure and generally agrees with the peers' assessment and the recommendations made by the Technical Committees involved. It is further emphasized that the students' opportunity for studying abroad should be further enhanced, therefore a new recommendation is introduced.

Assessment and analysis for the award of the Eurobachelor®/Euromaster® Label:

The TC is of the opinion that the targeted learning outcomes do not yet fully meet the expectations of the ECTN and that therefore the Eurobachelor label can only be awarded once the requirements are adequately fulfilled.

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

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Applied Mathematics	With requirements for one year	-	30.09.2024
Ba Physics	With requirements for one year	-	30.09.2024
Ba Chemistry	With requirements for one year	Eurobachelor® if all requirements are fulfilled	30.09.2024
Ma Mathematics	With requirements for one year	-	30.09.2024

Requirements

A 1. (ASIIN 2.1; 2.2) Student workload must be continuously assessed and a process has to be established to supervise the alignment of awarded credits and the actual student workload. Especially for the graduation projects, an expectation of the invested workload needs to be defined.

A 2. (ASIIN 4.3) An investment plan has to be presented how the equipment of the female laboratories will be enhanced to a degree as to allow for the production of high-quality graduate projects without using the male equipment.

A 3. (ASIIN 4.3) The availability of research labs for the female students and staff members must be ensured.

A 4. (ASIIN 1.3) The academic level of the final projects must be further enhanced by strengthening the students‘ skills in scientific work and research and their ability to work independently on their projects, including a written thesis comparable to international standards.

Recommendations

For all programes

E 1. (ASIIN 4.1) It is strongly recommended to reduce the workload of the female staff insofar as to allow for the supervision of female graduate projects through female supervisors.

E 2. (ASIIN 2.1) It is recommended to increase the number of courses in subject-specific English in favor of other, non-subject-specific courses.

E 3. (ASIIN 1.3) It is recommended to broaden the offer of elective courses and to increase the transparency of the courses offered for the students.

E 4. (ASIIN 2.1; 6) It is recommended to improve the co-operation with industry representatives, gathering feedback from employers and establishing contacts for student internships.

E 5. (ASIIN 6) It is recommended to establish an alumni network to receive graduate feedback, contacts into industry and to collect reliable data about the long-term success of the programmes.

E 6. (ASIIN 6) It is recommended to further enhance the participation of student representatives in the College administration and programme development.

E 7. (ASIIN 6) It is recommended to inform students about the consequences resulting from student evaluations and to discuss course evaluation results with the class in order to ensure an immediate feedback and active participation of the students.

E 8. (ASIIN 2.4) It is recommended to increase the students’ opportunity to study abroad.

For the Ba and Ma (Applied) Mathematics

E 9. (ASIIN 4.1) It is recommended to increase the number of female staff as to ensure accessibility of female students to computer workspaces.

Appendix: Programme Learning Outcomes and Curricula

According to the "Program Specification" the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Applied Mathematics:

"The Applied Mathematics program is designed to prepare students for employment in business, industry, and government. The program also provides the broad mathematical background requisite for postgraduate studies in mathematical sciences, statistics, or related disciplines. The variety of fields of courses within the program provides excellent preparation for careers in financial science, operations research, secondary education, or statistics.

Applied Mathematicians today are involved in a variety of activities, ranging from the creation of new theories to the analysis of scientific and managerial models. Beginning jobs for applied mathematicians are competitive now, and the demand for applied mathematicians is expected to increase. In addition, and more generally, the program aims to:

1. train students and develop them to become competent and well-equipped instructors to teach mathematics in college;

2. prepare students for mathematics oriented career in industry, business and public administration; and

3. lay the foundation for further research for a career as a research mathematician in a whole range of application areas.

Students who complete a Major in Applied Mathematics at the College of Science will be well-prepared for careers that require problem-solving and creative thinking abilities. Professions or occupations the program is designed to prepare students for:

- Education Employers: Public schools, Private schools, College and Universities.
- Government Areas: Involving research and problem-solving teams, Administration Employers.
- Industry Areas: Working in Public and Private Companies in Analysis Modeling and Simulation area, Information security systems.
- Market and Banking areas: Operations research, Branch Management, Information Analysis, Quality Control.

- Other: government ministries and institutions, and private sectors that require mathematical skills."

The following **curriculum** is presented:

Year	*Course Code*	*Course Title*	*Required or Elective*	*Pre-Requisite / Co-Requisite Courses*	*Credit/Contact Hours (Lec, Lab, Tut)*	*College or Department*
1st YEAR – LEVEL 1	MAT 101	Calculus (1)	Required		4(3,0,2)	Mathematics and Statistics
	PHY 101	General Physics (1)	Required		3(2,0,2)	Physics
	PHY 119	Physics Laboratory 1	Required	PHY 101[5]	1(0,2,0)	Physics
	CHM 101	General Chemistry	Required		4(2,2,2)	Chemistry
	ENG 140	English (1)	Required		2(2,0,0)	College of Languages and Translation
	IDE 133	Monotheism	Required		2(2,0.0)	College of Fundamentals of Religion
	QUR 101	The Holy Quran 1	Required		1(1,0,0)	College of Fundamentals of Religion
1st YEAR – LEVEL 2	MAT 102	Calculus (2)	Required	MAT 101	4(3,0,2)	Mathematics and Statistics
	STA 111	Introd. to Probability & Statistics	Required	MAT 101	3(2,0,2)	Mathematics and Statistics
	CS 140	Computer Programming (1)	Required		4(3,2,0)	College of Computer and Information Sciences
	ENG 195	English (2)	Required	PHY 101	3(2,0,2)	College of Languages and Translation
	JR 200	Fiqh (Islamic Jurisprudence)	Required		2(2,0,0)	College of Sharia
	QUR 151	The Holy Quran 2	Required		1(1,0,0)	College of Fundamentals of Religion
2nd YEAR – LEVEL 3	MAT 203	Calculus (3)	Required	MAT 102	4(3,0,2)	Mathematics and Statistics
	MAT 220	Elements of Sets & Structures	Required		2(2,0,2)	Mathematics and Statistics
	MAT 251	Math Software	Required	MAT 101	2(0,4,0)	Mathematics and Statistics
	PHY 106	General Physics (2)	Required	PHY 101	4(2,2,2)	Physics
	HST 101	Sirah (BiograPHY of Prophet Mohamed)	Required		2(2,0,0)	College of Social Science
	QUR 201	The Holy Quran 3	Required		1(1,0,0)	College of Fundamentals of Religion
2nd YE	MAT 222	Introd. to Number Theory	Required	MAT 151	3(2,0,2)	Mathematics and Statistics
	MAT 223	Linear Algebra	Required	MAT 220	4(3,0,2)	Mathematics and Statistics

[5] Co-requisite

Year	Course Code	Course Title	Required or Elective	Pre-Requisite / Co-Requisite Courses	Credit/Contact Hours (Lec, Lab, Tut)	College or Department
	MAT 231	Introd. to Differential Equations	Required	MAT 102	3(2,0,2)	Mathematics and Statistics
	STA 211	Mathematical Statistics	Required	MAT 203, STA 111	4(3,0,2)	Mathematics and Statistics
	ART 102	Arabic Composition	Required		2(2,0,0)	College of Arabic Language
	QUR 251	The Holy Quran 4	Required		1(1,0,0)	College of Fundamentals of Religion
3rd YEAR – LEVEL 5	MAT 311	Real Analysis	Required	MAT 203	4(3,0,2)	Mathematics and Statistics
	MAT 333	Numerical Analysis (1)	Required	MAT 231, MAT 223, MAT 251	4(2,2,2)	Mathematics and Statistics
	MAT 351	Introd. to Operations Research	Required	MAT 223	3(2,0,2)	Mathematics and Statistics
	MAT 354	Combinatorics and Graphs	Required	MAT 220	4(3,0,2)	Mathematics and Statistics
	ECO 100	Principles of Economics	Required		2(2,0,0)	College of Economics and Administrative Sciences
3rd YEAR–LEVEL 6	MAT 312	Complex Variables	Required	MAT 311	4(3,0,2)	Mathematics and Statistics
	MAT 321	Modern Algebra	Required	MAT 22, MAT 223	4(3,0,2)	Mathematics and Statistics
	MAT 371	Financial Mathematics	Required	ECO 100	4(3,0,2)	Mathematics and Statistics
	MAT 381	Selected Course (1)	Required	Upon specifying the course	3(4)	Upon the course
	COM 207	Communication Skills	Required		2(2,0,0)	College of Media and Communication
4th YEAR – LEVEL 7	MAT 434	Partial Differential Equations	Required	MAT 231	4(3,0,2)	Mathematics and Statistics
	MAT 461	Intro. to CryptograPHY & Coding	Required	MAT 321	4(3,0,2)	Mathematics and Statistics
	MAT 483	Selected Course (2)	Required	Upon specifying the course	3(4)	Mathematics and Statistics
	ENG 206	Technical Writing	Required		2(2,0,0)	College of Languages and Translation
	HST 102	History of KSA	Required		2(2,0,0)	College of Social Sciences
4th YEAR	MAT 433	Numerical Analysis (2)	Required	MAT 333, MAT 434	4(3,1,1)	Mathematics and Statistics
	MAT 463	Modeling and Simulation	Required	MAT 333	4(3,0,2)	Mathematics and Statistics

Year	Course Code	Course Title	Required or Elective	Pre-Requisite / Co-Requisite Courses	Credit/Contact Hours (Lec, Lab, Tut)	College or Department
	MAT 485	Selected Course (3)	Required	Upon specifying the course	4(5)	Mathematics and Statistics
	MAT 499	Research Project	Required		2(3)	Mathematics and Statistics
	PSY 301	Educational Psychology	Required		2(2,0,0)	College of Social Sciences

According to the "Program Specification" the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Physics:

"Provide a firm knowledge in physics with a strong foundation of mathematical, analytical, laboratory, and written communication skills.

The Physics program is designed to achieve the following goals:

1. Producing graduates who are well grounded in the fundamentals of Physics and acquisition of the necessary skills, in order to use their knowledge in Physics in a wide range of practical application.

2. Developing creative thinking and the power of imagination to enable graduates work in research in academia and industry for broader application.

3. Accommodating their relevant fields in allied disciplines and to allow the graduates of Physics to fit into the inter-disciplinary environment.

4. Relating the training of physics graduates to the employment opportunities within the country."

The following **curriculum** is presented:

Year	Course Code	Course Title	Required or Elective	Pre-Requisite / Co-Requisite Courses	Credit/Contact Hours (Lec, Lab, Tut)	College or Department
1st YEAR –	MAT 101	Calculus (1)	Required		4(3,0,2)	Mathematics and Statistics
	PHY 101	General Physics (1)	Required		3(2,0,2)	Physics
	PHY 119	Physics Laboratory 1	Required	PHY 101[6]	1(0,2,0)	Physics
	CHM 101	General Chemistry	Required		4(2,2,2)	Chemistry

[6] Co-requisite

Year	*Course Code*	*Course Title*	*Required or Elective*	*Pre-Requisite / Co-Requisite Courses*	*Credit/Contact Hours (Lec, Lab, Tut)*	*College or Department*
	ENG 140	English (1)	Required		2(2,0,0)	College of Languages and Translation
	IDE 133	Monotheism	Required		2(2,0.0)	College of Fundamentals of Religion
	QUR 101	The Holy Quran 1	Required		1(1,0,0)	College of Fundamentals of Religion
1st YEAR – LEVEL 2	PHY 105	Classical Mechanics (1)	Required	PHY 101	3 (2,0,2)	Physics
	MAT 102	Calculus (2)	Required	MAT 101	4(3,0,2)	Mathematics and Statistics
	CHE 102	General Chemistry (2)	Required	CHE 101	4(2,2,2)	Chemistry
	ENG 195	English (2)	Required	PHY 101	3(2,0,2)	College of Languages and Translation
	JR 200	Fiqh (Islamic Jurisprudence)	Required		2(2,0,0)	College of Sharia
	QUR 151	The Holy Quran 2	Required		1(1,0,0)	College of Fundamentals of Religion
2nd YEAR – LEVEL 3	PHY 230	Thermal Physics	Required	PHY 101, MAT 101	3(2,0,2)	Physics
	PHY 250	Modern Physics	Required	PHY 101, MAT 101	3(2,0,2)	Physics
	PHY 281	Thermal Physics & Mechanics Laboratory	Required	PHY 101 /PHY 230	2(0,3,0)	Physics
	MAT 251	Math Software	Required	MAT 101	2(0,4,0)	Mathematics and Statistics
	STA 111	Intr. to Probability and Statistics	Required	MAT 101	3(2,0,2)	Mathematics and Statistics
	HST 101	Sirah (BiograPHY of Prophet Mohamed)	Required		2(2,0,0)	College of Social Science
	QUR 201	The Holy Quran 3	Required		1(1,0,0)	College of Fundamentals of Religion
2nd YEAR – LEVEL 4	PHY 220	Electricity and Magnetism	Required	PHY 105 MAT 102	3(2,0,2)	Physics
	PHY 240	Wave & Optics	Required	PHY 105 MAT 102	3(2,0,2)	Physics
	PHY 282	Wave & Optics Laboratory	Required	PHY 101 /PHY 240	2(0,3,0)	Physics
	MAT 203	Calculus (3)	Required	MAT 102	4(3,0,2)	Mathematics and Statistics
	MAT 221	Intr. Linear Algebra	Required	MAT 251	3(2,0,2)	Mathematics and Statistics
	ART 102	Arabic Composition	Required		2(2,0,0)	College of Arabic Language
	QUR 251	The Holy Quran 4	Required		1(1,0,0)	College of Fundamentals of Religion
3rd	PHY 333	Mathematical Physics (1)	Required	MAT 203	3(2,0,2)	Physics

Year	*Course Code*	*Course Title*	*Required or Elective*	*Pre-Requisite / Co-Requisite Courses*	*Credit/Contact Hours (Lec, Lab, Tut)*	*College or Department*
	PHY 321	Electromagnetic Theory	Required	PHY 220 MAT 203	3(2,0,2)	Physics
	PHY 303	Classical Mechanics (2)	Required	PHY 105 MAT 203	3(2,0,2)	Physics
	PHY 381	Electromagnetism Laboratory	Required	PHY 220 / PHY 321	2(0,3,0)	Physics
	CS 140	Computer Programing (1)	Required		4(4,2,0)	Computer and Information College
3rd YEAR–LEVEL 6	PHY 334	Mathematical Physics(2)	Required	PHY 333	3(2,0,2)	Physics
	PHY 312	Quantum Mechanics	Required	PHY 303 STA 111	3(2,0,2)	Physics
	PHY 332	Statistical Physics	Required	PHY 230 STA 111	3(2,0,2)	Physics
	PHY 324	Electronics	Required	PHY 220	3(2,0,2)	Physics
	PHY 382	Electronic Laboratory	Required	PHY 381 / PHY 324	2(0,3,0)	Physics
	COM 207	Communication Skills	Required		2(2,0,0)	
4th YEAR – LEVEL 7	PHY 461	Solid state Physics	Required	PHY 312	4(3,0,2)	Physics
	PHY 462	Atomic Physics	Required	PHY 312	3(2,0,2)	Physics
	PHY 464	Nuclear Physics	Required	PHY 312	3(2,0,2)	Physics
	PHY 436	Computational Physics	Required	CS 140 PHY 334	3(2,0,2)	Physics
	PHY 481	Solid state Physics & Modern Laboratory	Required	PHY 382 /PHY 461	2(0,3,0)	Physics
	ENG 206	Technical Writing	Required		2(2,0,0)	College of Languages and Translation
4th YEAR – LEVEL 8	PHY 404	Fluid Mechanics	Required	PHY 303	3(2,0,2)	Physics
	PHY 471	Special Topics in Physics (1)	Required	*	3(2,0,2)	Physics
	PHY 472	Special Topics in Physics (2)	Required	*	3(2,0,2)	Physics
	PHY 498	Final Year Project	Required	PHY 461 PHY 462	2(2,0,0)	Physics
	HST 102	History of KSA	Required		2(2,0,0)	College of Social Sciences
	PSY 301	Educational Psychology	Required		2(2,0,0)	College of Social Sciences

According to “Program Specification” the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Chemistry:

“The department is committed to preparing distinguished graduates in chemistry who can join the labor market by providing them with the basic and applied chemistry sciences, refining their scientific and intellectual skills, and preparing highly qualified researchers who can innovate to achieve the mission of the college and the University.

The objectives set by the department, in support of the mission, require that the graduate of the chemistry program should:

- Provide a nurturing and conductive environment for quality teaching, learning and research in basic and applied chemistry.
- Attract, develop and retain renowned faculty.
- Maintain well equipped teaching and research facility.
- Communicate the benefit of chemistry to community service.

Obviously, a pre-requisite for achieving these outcomes is that, along with the department and faculty, the students should do the necessary hard work to follow the set procedures seriously and honestly.”

The following **curriculum** is presented:

D.3.4. Program 4: B.Sc. in Chemistry: Curriculum Study Plan

Year	Course Code	Course Title	Required or Elective	Pre-Requisite / Co-Requisite Courses	Credit/Contact Hours (Lec, Lab, Tut)	College or Department
1st YEAR – LEVEL 1	MAT 101	Calculus (1)	Required		4(3,0,2)	Mathematics and Statistics
	PHY 101	General Physics (1)	Required		3(2,0,2)	Physics
	PHY 119	Physics Laboratory 1	Required	PHY 101[10]	1(0,2,0)	Physics
	CHM 101	General Chemistry (1)	Required		4(2,2,2)	Chemistry
	HST 102	History of KSA	Required		2(2,0,0)	College of Social Sciences
	IDE 133	Monotheism	Required		2(2,0.0)	College of Fundamentals of Religion
	QUR 101	The Holy Quran 1	Required		1(1,0,0)	College of Fundamentals of Religion
1st YEAR – LEVEL 2	CHM 102	General Chemistry (2)	Required	CHM 101	4(2, 2, 2)	Chemistry
	MAT 103	Mathematics	Required	MAT 101	4(3, 0, 2)	Mathematics and Statistics
	STA 111	Intro. To Probability & Statistics	Required	MAT 101	3(2, 0, 2)	Mathematics and Statistics
	CHM 121	Organic Chemistry (1)	Required	CHM 101	4(2, 2, 2)	Chemistry
	JR 200	Fiqh (Islamic Jurisprudence)	Required		2(2, 0, 0)	College of Sharia
	QUR 151	The Holy Quran (2)	Required		1(1, 0, 0)	College of Fundamentals of Religion
2nd YEAR – LEVEL 3	CHM 211	Inorganic Chemistry (1)	Required	CHM 102	4(2, 3, 1)	Chemistry
	CHM 221	Organic Chemistry (2)	Required	CHM 121	4(2, 2, 2)	Chemistry
	CHM 241	Physical Chemistry (1)	Required	CHM 102	4(2, 2, 2)	Chemistry
	CHM 251	Software in Chemistry	Required	CHM 121	2(0, 4, 0)	Chemistry
	HST 101	Sirah(Biography of Prophet Mohamed)	Required		2(2, 0, 0)	College Social Science
	QUR 201	The Holy Quran (3)	Required		1(1, 0, 0)	College of Fundamentals of Religion

Year	Course Code	Course Title	Required or Elective	Pre-Requisite / Co-Requisite Courses	Credit/Contact Hours (Lec, Lab, Tut)	College or Department
2nd YEAR – LEVEL 4	CHM 212	Inorganic Chemistry (2)	Required	CHM 211	4(2, 3, 1)	Chemistry
	CHM224	Organic Compounds Spectroscopy	Required	CHM 221	2(2, 0, 0)	Chemistry
	CHM 231	Analytical Chemistry	Required	CHM 102	4(2, 3, 1)	Chemistry
	CHM 242	Physical Chemistry (2)	Required	CHM 241 & MAT 103	4(2, 3, 1)	Chemistry
	ART 102	Arabic Composition	Required		2(2,0,0)	College of Arabic Language
	QUR 251	The Holy Quran 4	Required		1(1,0,0)	College of Fundamentals of Religion
3rd YEAR – LEVEL 5	CHM 313	Organometallic Chemistry	Required	CHM 211	3(3, 0, 0)	Chemistry
	CHM 325	Heterocyclic Chemistry	Required	CHM 221	3(3, 0, 0)	Chemistry
	CHM 332	Instrumental Analysis	Required	CHM 231	4(2, 3, 1)	Chemistry
	CHM 343	Electrochemistry and Corrosion	Required	CHM 241	4(2, 3, 1)	Chemistry
	PHY 255	Introduction to Modern Physics	Required	PHY 101	2(2, 0, 0)	Chemistry
3rd YEAR–LEVEL 6	CHM 326	Synthesis of Organic Compounds	Required	CHM 325	2(0, 4, 0)	Chemistry
	CHM 327	Organic Reactions Mechanism	Required	CHM 224	3(3, 0, 0)	Chemistry
	CHM 333	Chemical Separation Methods	Required	CHM 332	4(2, 3, 1)	Chemistry
	CHM 345	Colloids and Surface Chemistry	Required	CHM 242	4(2, 2, 1)	Chemistry
	CHM 346	Quantum Chemistry	Required	CHM 242	2(2, 0, 0)	Chemistry

Year	Course Code	Course Title	Required or Elective	Pre-Requisite / Co-Requisite Courses	Credit/Contact Hours (Lec, Lab, Tut)	College or Department
4th YEAR – LEVEL 7	CHM 414	Selected Course (2)	Selected (2)	Upon specifying the course	Upon specifying the course	Chemistry
	CHM 428	Polymers and Petrochemicals	Required	CHM 325	2(2, 0, 0)	Chemistry
	CHM 434	Environmental Chemistry	Required	CHM 333	3(2, 2, 0)	Chemistry
	CHM 447	Homogeneous and Heterogeneous Catalysis	Required	CHM 345	2(2, 0, 0)	Chemistry
	CHM 448	Solid State and Material Science	Required	CHM 343	4(4, 0, 0)	Chemistry
4th YEAR – LEVEL 8	CHM 415	Nuclear and Radiation Chemistry	Required	CHM 313	2(2, 0, 0)	Chemistry
	CHM 416	Selected Course (3)	Selected (3)	Upon specifying the course	Upon specifying the course	Chemistry
	CHM 429	Carbhydrate Chemistry and Natural Products	Required	CHM 327	4(2, 3, 1)	Chemistry
	CHM 449	Nano-Chemistry	Required	CHM 345	2(2, 0, 0)	Chemistry
	CHM 461	Final Project	Required		3(1, 4, 0)	Chemistry

According to the "Program Specification" the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Mathematics:

"To prepare well qualified staff who will contribute effectively in economic and social developments of Saudi Arabia and who will work innovatively on enhancing the higher education system of the country in the field of mathematics and its applications to other disciplines.

1. Developing the student's abilities and potentials to enhance their mathematical skills.

2. Providing the students with appropriate skills to become independent learners and be experienced in doing scientific research.

3. Providing a strong package of professional skills to assure god integration in careers that uses mathematics.

4. Enhancing the student's scientific background, to continue graduate studies in the Ph.D. at national or international universities."

The following **curriculum** is presented:

Year	Course Code	Course Title	Required or Elective	Pre-Requisite / Co-Requisite Courses	Credit/Contact Hours (Lec, Lab, Tut)	College or Department
1st YEAR – LEVEL	MAT 611	Measure and Integration	Required		4(3,0,1)	Mathematics and Statistics
	MAT 621	Advanced Linear Algebra	Required		4(3,0,1)	Mathematics and Statistics

Year	*Course Code*	*Course Title*	*Required or Elective*	*Pre-Requisite / Co-Requisite Courses*	*Credit/Contact Hours (Lec, Lab, Tut)*	*College or Department*
	MAT 641	Numerical Analysis	Required		4(3,0,1)	Mathematics and Statistics
1st YEAR – LEVEL 2	MAT 613	Introduction to Functional Analysis	Required		4 (3, 0, 1)	Mathematics and Statistics
	MAT 623	Algebra (1)	Required		4 (3, 0, 1)	Mathematics and Statistics
	MAT 631	Partial Differential Equations	Required		4 (3, 0, 1)	Mathematics and Statistics
2nd YEAR – LEVEL 3	MAT 671	Topology	Required		4 (3, 0, 1)	Mathematics and Statistics
	MAT xxx	Ellective Course (1)	Elective		4 (3, 0, 1)	Mathematics and Statistics
	MAT xxx	Ellective Course (2)	Elective		4 (3, 0, 1)	Mathematics and Statistics
2nd YEAR – LEVEL 4	MAT xxx	Ellective Course (3)	Elective		4 (3, 0, 1)	Mathematics and Statistics
	MAT 699	Research Project	Required		4	Mathematics and Statistics