ASIIN Seal

Accreditation Report

Bachelor's Degree Programmes
Biology
Mathematics
Physics

Provided by
University of Bahrain

Version: 26 September 2025

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]
بكالوريوس العلوم في علم الأحياء	Bachelor of Science in Biology	ASIIN	2019 – 2024 (ASIIN)	10
بكالوريوس العلوم في الرياضيات	Bachelor of Science in Mathematics	ASIIN	2019 – 2024 (ASIIN)	12
بكالوريوس العلوم في الفيزياء	Bachelor of Science in Physics	ASIIN	2019 – 2024 (ASIIN)	13
Date of the contract: 09.07.2024 **Submission of the final version of the self-assessment report:** 27.02.2025 **Date of the audit:** 06.05. – 08.05.2025				
Expert panel: Prof. Dr. Martin Buhmann, Giessen University Prof. Dr. Werner Manz, Koblenz University Ass. Prof. Dr. Laura Khudaysh Muqri, Jazan University Dr. Marc Vandemeulebroeke, UCB Farchim SA Hajis Al-Sadi, Sultan Qaboos University				
Representative of the ASIIN headquarter: Rainer Arnold				
Responsible decision-making committee: Accreditation Commission for Degree Programmes				

[1] ASIIN Seal for degree programmes;
[2] TC: Technical Committee for the following subject areas: TC 10 – Life Sciences; TC 12 – Mathematics; TC 13 – Physics

Criteria used: European Standards and Guidelines as of 15.05.2015 ASIIN General Criteria as of 28.03.2014 Subject-Specific Criteria of Technical Committee 10 – Life Sciences as of 28.06.2019 Subject-Specific Criteria of Technical Committee 12 – Mathematics as of 09.12.2016 Subject-Specific Criteria of Technical Committee 13 – Physics as of 20.03.2020	

B Characteristics of the Degree Programmes

a) Name	Final degree (original)	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
Bachelor Biology	Bachelor of Science in Biology	-	6	Full time	no	8 Semester	129 CH	Fall Semester 1998
Bachelor Mathematics	Bachelor of Science in Mathematics	-	6	Full time	no	8 Semester	127 CH	Fall Semester 1998
Bachelor Physics	Bachelor of Science in Physics	-	6	Full time	no	8 Semester	129 CH	Fall Semester 1998

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

Introduction

Established in 1986, the University of Bahrain (UoB) is a public university that makes distinctive contribution to lead the nation in terms of human capital development, leading innovation and driving the nation's economic development. Currently, UoB is educating more than 30000 students.

The College of Science consists of four departments, and in 2023, the College of Science included 73 academic faculty members and 37 administrative members who work on a full-time basis, in addition to a number of academic collaborators who work in the college on a part-time basis, all of whom work to achieve the vision and mission of the University of Bahrain.

The College of Science currently offers 13 academic programs, including six undergraduate B.Sc. programs, six post graduate programs (M.Sc. and PhD), in addition to the Associated Diploma in Science programme, which is an (Exit) programme that was introduced for struggling students and those wishing to exit the B.Sc. programmes.

The Department of Biology at the University of Bahrain, established in 1978, is one of the university's oldest and most dynamic departments. It offers both undergraduate and post-graduate programs, including a Bachelor of Science (B.Sc.) in Biology and a Master of Science (M.Sc.) in Biological Sciences. The department is staffed by 17 faculty members specializing in various fields such as ecology, marine biology, and biotechnology. It is equipped with 12 laboratories, including specialized labs for cell biology, plant physiology, biochemistry, and marine biology, as well as facilities like an aquarium room, computer lab, and greenhouse.

The department actively engages in research collaborations with national and international institutions, such as the National Initiative for Agricultural Development and the National Space Science Agency, focusing on projects like detecting diseases in palm trees. It also offers community services, including scientific consultations, specialized lectures, and training workshops.

The Department of Mathematics was established in 1979. It is a major center for mathematics research and education in the Kingdom of Bahrain. It serves around ten thousand students every year and features recognized faculty with outstanding accomplishments in teaching, research, and service. The Department of Mathematics is keen to provide its graduates with essential mathematical and statistical knowledge to develop critical and logical thinking that will enable them to pursue different career goals such as industrial employment, professional education, or preparation for graduate programs. The department is also committed to research in pure and applied mathematics, statistics, actuarial

science, data science and related fields, and to active participation in public professional activities of its disciplines.

The Department of Physics at the University of Bahrain, established in 1978, is a cornerstone of the College of Science. It offers comprehensive undergraduate and postgraduate programmes, including a Bachelor of Science (B.Sc.) in Physics and a M.Sc. in Physics. Research is a significant focus, with faculty members contributing to fields such as astrophysics, magnetic materials, and renewable energy.

Summary

The experts positively notice the following aspects:

- Students are satisfied with the degree programmes and teaching methods and styles.
- Dedicated teaching staff with an international background and good communication between students and teachers.
- internships, especially in Biology, focus on regional problems in Bahrain.
- Spacious library with several learning areas and good access to e-journals, e-books, and scientific databases.
- Comprehensive quality management with the involvement of all stakeholders.
- Good cooperation between stakeholders (employers, alumni) and the university.
- Employers are satisfied with the graduates' qualification profile.
- Involvement of students' in the university's boards.

In the following areas, the experts see room for improvement:

- Students' academic mobility is rather low and should be better promoted. The number of international cooperations and scholarships should be increased and students should be encouraged to spend some time abroad.
- The module descriptions should be available via the university's homepage.
- No sample Diploma Supplements, which are aligned with the European template were submitted.
- The instruments in the laboratories, especially in physics, are quite old and should be replaced. Additionally, more advanced devices should be purchased so that students can get hands-on experience with current scientific methods.
- It would be useful to introduce the ECTS in addition to awarding Bahraini credit hours

and to include this information in the module descriptions and the transcript of records. To this end, UoB should define how many hours of students' work are required for one ECTS point.

- The College of Science is understaffed and the teachers' workload is high. It is necessary to increase the number of academic staff members.
- It would be useful to better support students in finding suitable jobs after graduation, e.g. by organising a job fair especially for the College of Science.
- The employers recommend to improve students' communication skills, e.g. by introducing more presentations and group work in the courses.
- Students suggest increasing applied mathematics and programming skills in the Mathematics programme.
- It would be useful to offer one physics course (physics 101 & physics 102) for physics students and another one for other students from the College of Science.
- An official AI guideline would be needed and students should be introduced in correctly using AI.
- To lower the teaching load, it is recommended to use larger lecture halls for lectures with a large number of students, e.g. for the introductory lectures in biology and physics. Additionally, more online-teaching and hybrid-teaching methods for these courses should be introduced.
- It would be very useful continually conducting cohort analysis of students in order to systematically observe and follow a clearly defined group of students to make well-founded analysis about study progression as well as about graduation and dropout rates.

C Expert Report for the ASIIN Seal

1. The Degree Programme: Concept, content & implementation

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

Evidence:

- Self-Assessment Reports
- Study plans
- Module descriptions
- Programme Specifications
- Homepage U of Bahrain: https://www.uob.edu.bh/
- Homepage Ba Biology: https://science.uob.edu.bh/undergraduate/bachelor-in-biology/
- Homepage Ba Mathematics: https://science.uob.edu.bh/undergraduate/bachelor-in-mathematics/
- Homepage Ba Physics: https://science.uob.edu.bh/undergraduate/bachelor-in-physics/
- Discussions during the audit

Preliminary assessment and analysis of the experts:
The experts base their assessment of the learning outcomes as provided in the programme specifications and in the Self-Assessment Reports of the three Bachelor's degree programmes under review.

For all three undergraduate programmes, UoB has described Programme Educational Outcomes (PEO) as well as Programme Intended Learning Outcomes (PILO). While the PEO are rather general and cover three main aspects: career, graduate studies, and society development and refer to the mission of UoB, the PILO cover several specific competences students should acquire in their respective degree programme. The PEO and PILO of the undergraduate programmes are publically available on the respective websites, which are updated regularly to reflect any change made on the programme. The PEO and PILO of the

programmes are discussed with the Students Advisory Committee (SAC) and Program Advisory Committee (PAC) to ensure their alignment with social community and local market needs.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee Life Sciences as a basis for judging whether the intended learning outcomes of the Bachelor's degree programme Biology, as defined by UoB, correspond with the competences as outlined by the SSC.

Graduates of the Bachelor's degree programme Biology should understand the basic biological processes and be capable of applying the scientific methods of the biological sciences. In addition, graduates should acquire relevant scientific knowledge in the different biological areas such as botany, zoology, biotechnology, microbiology, ecology, cell biology, molecular biology, biochemistry, marine biology, genetics, biostatistics and related natural sciences (chemistry, physics) and mathematics. Furthermore, the students should master the principles and concepts of assessing biological resources and be able to design, perform, and assess independent laboratory experiments and fieldwork in biology. Moreover, students should learn how to collect, analyse, and interpret data to solve biological issues. Finally, students should be qualified to conduct life-long learning and work effectively, both individually and in a team, and to demonstrate a scientific, critical, and innovative attitude in biology learnings, laboratory works, and environmental care.

The programme's educational objectives and learning outcomes are expected to equip the graduates with life skills required to develop and adapt to the wide spectrum of possible occupations in areas such as health sciences, biotechnology, and agriculture. Biology graduates have various occupational opportunities, which include working as a researcher, teacher/lecturer, entrepreneur, and they can find suitable jobs in industry, academia, or public institutions.

Graduates of the Bachelors' degree programme Mathematics should acquire a profound knowledge of mathematics and gain methodological competences including mastering the principles of mathematical modelling, differential equations, numerical methods, and algorithm analysis. Students should also develop a mathematical, logical, and rigorous reasoning and the ability to design and analyse mathematical models and apply them in decision-making processes through both inductive and deductive logic. In addition, they should be familiar with different fundamental areas of mathematics (like algebra, discrete mathematics, mathematical computation and simulation, multivariable calculus, statistics, actuarial mathematics, data science, and mathematical logic). Finally, graduates should have a thor-

ough understanding of the underlying mathematical concepts and be able of communicating and developing mathematical ideas effectively, both orally and in writing, including logical reasoning, generalization, abstraction, and formal proof.

Mathematics graduates usually follow two distinct careers: some work in academia or higher education as math researchers or teachers, while others work in private companies. Job opportunities in the industry are manifold: some graduates have an interest in information technology and work as computer programmers, software developers, or data scientists. Others may take jobs in the financial sector and work as consultants or financial analysts. Some graduates pursue further degrees (Master or PhD) in mathematics or other scientific fields.

The intended learning outcomes of the Bachelor's degree programme Physics focus on conveying scientific methods for observing, understanding, analysing, and solving physical phenomena and problems. This includes that graduates should also acquire fundamental knowledge of mathematics, computer sciences, and natural sciences relevant to physics. Graduates should understand and be able to explain the basic concepts of physics, modern physics, statistical physics, core physics, solid-state physics, and materials physics. Furthermore, graduates need to know how to conduct and prepare experiments, including the application of scientific methods and the process of identifying, analysing, and interpreting physics problems. In addition, graduates should be capable to apply and evaluate modern methods and instruments of studying and teaching physics by using information and communication technology. This means that they should be proficient in understanding, analysing, and solving problems in the area of physics using mathematical, computational, or technical methods and techniques.

Physics graduates have numerous job opportunities, because they are not restricted to a specific area, but are prepared for a science and technology oriented job market. As a result, physics graduates work in various sectors such as universities, research institutes, public and private agencies, information & communication companies, or high schools. Some open their own private business and others work in areas such as banking, insurance, retail, or other services.

Supplementing the subject-related qualification objectives, students of all three Bachelor's programmes should have adequate competences in oral and written communication skills, be capable of working autonomously as well as in a group, and be able to conduct research activities. Furthermore, they should have trained their analytical and logical abilities and should acquire communicative and language skills as well as develop a strategy for life-long learning.

In summary, the experts are convinced that the intended qualification profiles of the three undergraduate programmes under review allow students to take up an occupation, which corresponds to their qualification. The degree programmes are designed in such a way that they meet the goals set for them.

The experts conclude that the objectives and intended learning outcomes of the degree programmes adequately reflect the intended level of academic qualification (EQF 6) and correspond sufficiently with the ASIIN Subject-Specific-Criteria (SSC) of the respective Technical Committee.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Reports
- Study plans

Preliminary assessment and analysis of the experts:
UoB awards a Bachelor of Science to the graduates of the three undergraduate programmes.

The experts confirm that the names of all three Bachelor's degree programmes appropriately reflect the focus and content of the respective programme. Moreover, the English translation and the original Arabic names of the programmes correspond with the intended aims and learning outcomes.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report
- Study plans
- Module descriptions
- Programme Specifications
- Homepage U of Bahrain: https://www.uob.edu.bh/
- Homepage Ba Biology: https://science.uob.edu.bh/undergraduate/bachelor-in-biology/

- Homepage Ba Mathematics: https://science.uob.edu.bh/undergraduate/bachelor-in-mathematics/
- Homepage Ba Physics: https://science.uob.edu.bh/undergraduate/bachelor-in-physics/
- Discussions during the audit

Preliminary assessment and analysis of the experts:
All three undergraduate programmes are offered by the College of Science of UoB. All undergraduate programmes at UoB are designed as full time programmes to be completed in eight semesters or four academic years with a maximum of 14 semesters or seven academic years. Each semester is equivalent to 16 weeks of learning activities. This does not include the short summer semester (eight weeks). Courses may be offered in the summer semester, according to the needs of the college and the department, and after the approval of the University Council. Students have to pay extra for enrolling in the summer semester (50 dinars ~ 119€) and cannot register for more than three courses or 10 credits. The summer semester is mostly designed for students who missed or failed a course and want to make up on missing credit hours (cr).

The curriculum of all three undergraduate programmes encompasses University Requirements (UR), College Requirements (CR), Department Requirements (Major Requirements (MR), and Major Elective Requirements (ME)). University requirements consist of a set of courses that are mandatory for all students enrolled in an undergraduate programme, regardless of their major:

University Requirements

Code	Title	Cr	Prerequesites
ARAB 110	Arabic Language Skills I	3	None
HIST 121	Modern Bahrain History and Culture	3	None
ISLM 101	Islamic Culture	3	None
HRLC 107	Principles of Human Rights	2	None

Table 1: University Requirements, Source: SAR UoB

College requirements specify compulsory courses for all students within the college, while Department Requirements include major and elective courses specific to the major field of study.

College Requirements

Code	Title	Cr	Prerequesites
MATHS 121	Calculus & Analytic Geometry I	3	None
CHEM 101	General Chemistry I	4	None
PHYCS 101	General Physics I	4	None
BILOS 102	General Biology I	4	None
ENGL 125	English for Science I	3	None
ENGL 126	English for Science II	3	ENGL 125
ITCS 113	Computer Programming I	3	None

Table 2: College Requirements, Source: SAR UoB

The Biology programme is designed to provide students with a comprehensive understanding of biological sciences, emphasizing the relationship between structure and function at molecular, cellular, and organismal levels. It aims to prepare graduates for employment in life sciences, environmental, and health sectors, or for further studies in graduate or professional schools. It starts in the first semester with two general biology courses, which cover the basics of cell structure and functions involving the major cellular processes up to the classification of organisms and their ecological interaction. Each of the two courses involves a practical session of three hours a week in addition to three hours of theoretical lectures. The practical content prepares the students for higher levels of the programme, which require laboratory skills and handling of chemicals and biological samples. Scientific methods are taught as a practical-based pilot project through which the students will formulate their hypotheses, test them, collect their data and analyse them. Students are trained in literature search and scientific reporting which is submitted at the end of the project. This includes an anti-plagiarism workshop.

In the second year of studies, four courses are required to cover the different levels of organisms including microorganisms, invertebrates, vertebrates, and plants. This will expose the students to a wide scope of diverse knowledge in the major fields of biological sciences and prepare them for higher specialized and focused courses at later semesters. Organic chemistry and statistics are two out-of-department required courses, which enable the student to gain more knowledge to interpret biological reactions and the required basic statistical analysis needed.

In the third and fourth years of study, 14 courses (42 credits) are required, which cover advanced, applied, theoretical and practical skills related to biological sciences. Seven elective courses with 21 credits are also offered. The major required courses provide in-depth specialized skills and knowledge in the major fields of biology such as molecular biology, ecology and marine biology, biochemistry, and microbiology.

Each of the biology core courses, and most of the seven electives, includes six practical hours. The emphasis on the practical work in the programme gives the students the opportunity to apply theoretical knowledge in experimental exercises, demonstration sessions, case studies, and presentations. The laboratory work will expose the students to different approaches in addressing scientific problems through the application of different investigative techniques and tools required for professional life.

The curriculum includes two additional compulsory courses: "Internship" and "Senior Research Project" (Bachelor's Thesis). These courses are designed to prepare graduates for the labour market and with the necessary skills to conduct research activities. The students can register in these courses only when they pass 75 credits of the programme.

Students need to complete 129 credit hours, which include 11 credits for University Requirement, 24 credits for College Requirement, 49 credits for Major Requirements, 14 credits for Major Support Requirements, 21 credits for Major Electives, 9 credits for Elective General Studies, and 1 credit for the internship. In total, the curriculum includes 42 courses with 99 mandatory and 30 elective credit hours. The general structure of the biology curriculum is summarised in the following table:

Course Type	Credit Hours
University Requirements (UR)	11
College Requirements (CR)	24
Major Requirement (MR)	49
Major Support Requirement (MSR)	14
Major Elective (ME)	21
General Studies Elective (GSE)	9
Training (Internship, Practicum) (TR)	1
Total Number of Credit Hours	129

Table 3: Curriculum structure Ba Biology, Source: SAR UoB

The Mathematics programme has a 127-credit-hour curriculum (including the 1-credit-hour training/internship course), which is balanced between theory and practice. More specifically, the curriculum constitutes of four courses (11 credit hours) as University Requirements (UR) and ten courses (24 credit hours) as College Requirements (CR). Moreover, the curriculum includes 10 credit hours distributed among three Major Support Requirements (MSR) courses, which aim to add important non-major relevant skills to the students. In addition, there are seventeen Major Requirements (MR) courses with 53 credit hours that aim to equip students with the necessary mathematical knowledge and seven Major Elective (ME) courses with 12 credit hours that give students possibility to focus in a specific

area within mathematics to enhance their knowledge are offered. Besides this, there are two General Studies Elective (GSE) courses with six credit hours, which have to be selected from humanities and social sciences, and the one-credit internship, which usually takes place during the summer to expose students to the workplace environment and develop their communication skills that prepare them for the labour market. In total, the curriculum includes 41 courses with 100 mandatory and 27 elective credit hours. The general structure of the curriculum is summarised in the following table:

Course Type	Credit Hours	No. of Courses
University Requirements (UR)	11	4
College Requirements (CR)	25	7
Major Requirement (MR)	53	17
Major Support Requirement (MSR)	10	3
Major Elective (ME)	21	7
General Studies Elective (GSE)	6	2
Training (Internship, Practicum) (TR)	1	1
Total Number of Credit Hours	127	
Total Number of Courses	41	

Table 4: Curriculum structure Ba Mathematics, Source: SAR UoB

Students start the first semester with five courses from university or college requirements, which is also the case for all other undergraduate programmes offered by UoB. Over the second semester, students will proceed with another two more courses from university/college requirements along with two courses taken as a major support requirement as well as one course from the major requirements (specifically Calculus II). This means that students start taking major requirements by the end of the first year.

Over the second year, students are expected to cover ten courses with a variety of content in mathematics and statistics as major requirements, natural sciences (biology and chemistry) as college requirements, IT-related course as major support requirements, and a free elective course.

According to the curriculum, students need to enroll in eleven courses of which two are major elective courses selected from pre-specified lists of mathematics courses. Furthermore, students need to undergo a training session (internship) for two months.

Finally, students will complete the rest of the programme, comprising ten courses including five major elective courses and four major requirement courses. This also includes the senior project (Bachelor's Thesis) during which students need to work on a small-scale project under the supervision of an academic staff member to prepare a written report and deliver an oral presentation by the end of the semester.

The Physics programme spans four years and encompasses 129 credit hours, providing students with robust scientific and technical skills. The curriculum covers various concentrations such as Electronics, Photonics, Environmental and Atmospheric Physics, Astronomy and Space Science, and Computational Physics. Courses include subjects like Optoelectronics, Plasma Physics, Solid State Physics, Environmental Physics, and Space Science and Technology. The 129 credits include 11 credits of University Requirement, 24 credits of College Requirements, 14 credits of Major Support Requirements, 49 credits of Major Requirements, 21 credits of Major Electives, 9 credits of General Studies Electives and one credit for the internship. Students select seven (third and fourth year) courses from the Major Elective List with at least two courses from the fourth year. They also should select three General Studies Electives; one of them should be from Humanities and Social Sciences.

The Physics programme starts with general knowledge courses where students enhance their basic knowledge, writing, and language skills. Then, they move on to introductory physics courses in the first four semesters, which include some basic practical laboratory skills. In the third and fourth year, advanced topics related to physics are covered. After completing 75 credits, students are eligible to take the internship course and during the last year, students need to conduct their senior research project (Bachelor's Thesis). The general structure of the curriculum is summarised in the following table:

Course Type	Credit Hours
University Requirements (UR)	11
College Requirements (CR)	24
Major Requirement (MR)	49
Major Support Requirement (MSR)	14
Major Elective (ME)	21
General Studies Elective (GSE)	9
Training (Internship, Practicum) (TR)	1
Total Number of Credit Hours	129
Total Number of Courses	--

Table 5: Curriculum structure Ba Physics, Source: SAR UoB

The content and structure of the programmes has undergone improvements and changes to adapt to the changes in the field and the constant feedback received from the programmes' stakeholders, which are taken into consideration for improvement. The stakeholders comprise of the faculty, alumni, Students Advisory Committee (SAC), and the Program Advisory Committee (PAC).

Periodic programme review is done as per the Internal Quality Review Policy, which requires the Quality Assurance and Accreditation Center (QAAC) at the university to set a rolling plan to internally reviewing the study programmes.

The expert team concludes that the imparted discipline-specific curricular content of all three programmes is adequate for the level and objectives of the programmes. The courses are suited for achieving the intended learning outcomes in a comprehensive manner, as specified in the module descriptions.

The students and alumni interviewed by the experts during the audit underline that curricular contents and learning outcomes match their expectations with regard to their professional career. Moreover, the employers confirm during the discussion with the experts, that they are in general satisfied with the qualification profile of the graduates of all three undergraduate programmes. However, they stress that it is important for UoB and especially for the College of Science to keep up with technological developments (e.g. AI, bioinformatics, and modern analytical methods) and make sure that all students receive the necessary hands-on experience in the laboratories. Additionally, the employers would like to conduct more joint research projects with UoB, but to this end, teachers would need more time to spend on research activities. Consequently, the employers also stress the need for increasing the number of staff members at the College of Science (see criterion 3.1). Finally, they point out that it would be useful to improve students' communication skills e.g. by introducing more presentations and group projects.

During the audit, the experts learn that UoB offers an exit programme through the Associate Diploma Programme, which is designed to provide students who are unable to complete their Bachelor's degree with a recognised qualification. This programme ensures that students can still attain an academic credential, reflecting their completed coursework and facilitating their entry into the workforce or further studies. By awarding an Associate Diploma, UoB acknowledges the academic efforts of these students, preventing them from leaving the university without any formal qualification. This approach aligns with modern educational trends that emphasise flexible learning pathways and the recognition of partial academic achievements. However, the exit programme is not a real programme in which students can enroll. It is just an opportunity for students to receive a degree if they are not able to complete the Bachelor's programme.

As the use of artificial intelligence (AI) becomes more and more important, the experts point out that an official AI guideline would be needed and students should be introduced in correctly using AI. It is useful for a university to issue an official guideline for the use of AI, because it provides clarity, consistency, and ethical direction for students, faculty, and

staff. Additionally, teaching students the correct AI use is important to give them the tools, knowledge, and mindset to thrive in a digital, AI-augmented world.

A guideline helps to define what constitutes acceptable vs. inappropriate use—e.g. when it is allowed to use AI for brainstorming vs. when it counts as plagiarism or academic misconduct. Without clear rules, students may unknowingly cross ethical lines. An appropriate guidance would support fair assessments and prevent unintentional violations of academic honesty policies. Proper guidance ensures that AI supports learning, rather than replacing critical thinking, research, or writing skills, and teachers can incorporate AI meaningfully into teaching, e.g., using AI as a learning tool rather than as a shortcut.

The experts appreciate that the Biology Department will offer an elective course in bioinformatics for undergraduate students from the academic year 2025/26. This is important, because modern biology generates massive datasets (genomics, proteomics, transcriptomics, etc.) and bioinformatics equips students with the skills to analyse and interpret biological data, turning raw sequences into meaningful insights. As bioinformatics is a key growth area in biotechnology, pharmaceuticals, personalized medicine, and academic research, students with even basic bioinformatics skills are more competitive in the job market.

With respect to the general physics courses, which are a College Requirement and are taught together with other science majors, the experts recommend offering separate courses in physics (physics 101 & physics 102) for physics students on the one hand and for all other majors from the College of Science on the other hand. Physics majors need a deep, rigorous foundation for advanced studies in theoretical and experimental physics with calculus-based, theory-heavy content, whereas non-physics majors may benefit more from conceptual or moderately mathematical approaches—especially at the introductory level.

The experts notice that only the Biology programme offers a compulsory course in research methods in the sixth semester. The Mathematics programme plans to introduce a course on research methods from the next academic year. In the Physics programme the teachers currently advise the students individually before they start on their final project. The experts recommend introducing a compulsory course in research methods also for the Physics programme. A solid foundation in research methods is essential to prepare students for conducting their final project and it builds their confidence in designing and executing research activities. The experts think that a joint course in research methods could be offered for students at the College of Science. This would be more efficient and lower the teaching load.

While analysing the provided sample exams, the experts see that error calculation is not taken into account in all courses. Although, the programme coordinators ensure that error

calculation is taught in the laboratory courses of the first year, in more advanced classes this important aspect of practical scientific work is neglected.

The students confirm in the discussion with the experts that they are in general satisfied with the organisation and content of the degree programmes. However, they mention some aspects with room for improvement. First, they suggest offering more support with respect to finding suitable jobs after graduation. So far, the available offers by the Career Development Center mostly focus on engineering and business students. The needs of the science students are neglected and most employers present at the job fair are not specifically looking for science students. For this reason, the experts suggest organising an annual job fair only for the College of Science, this will open up more job opportunities for the graduates and make the degree programmes better known. Secondly, students would like to have the opportunity to conduct an additional voluntary internship also in the public sector, without awarding any credits or supervision. Only a letter of recommendation from UoB would be required for this. In addition, the students would like to have more practical courses; especially in physics, more hands-on experience with modern instruments is required. As the technical equipment in the physics laboratories it mostly outdated it should be replaced in order to allow students to conduct up-to-date experiments (see criterion 3.2). Moreover, applied mathematics and programming skills could be improved in the Mathematics programme. This would better equip mathematics students with tools to tackle real-world problems using mathematical models—such as in economics, physics, biology, or engineering. More programming skills would allow them to implement these models, simulate scenarios, and analyse data to make informed decisions. Finally, the students would like to have a "real" free elective, where they can choose from any course offered by UoB and not only from a list of selected courses. With respect to the Physics programme, the students would like to be able to choose the course "Calculus III" as an elective. Currently, physics students cannot take this course. The experts support all these suggestions.

In general, the experts confirm that all three degree programmes under review impart a broad range of competencies so that graduates can find suitable jobs and are well prepared for entering the labour market.

International Mobility

The experts discuss with the Heads of Department whether there are windows of mobility for the students and point out that the international visibility and reputation of a university is increased by its research activities and the academic mobility of staff members and students.

With respect to academic mobility of students, the experts find that studying abroad for a limited period during a Bachelor's programmes is not an option so far. The Heads of Department concede that the College of Science has several international contacts but mainly for postgraduate studies. The only positive exception is a summer programme for physics students with the European Organization for Nuclear Research (CERN) in Switzerland. Two students are sent to CERN from the Physics Department every summer. The programme is financed by CERN. In addition, some exchange programmes with international universities exist for Bachelor's students; these programmes are established centrally by UoB and students are accepted according to their GPA.

UoB provides some opportunities for students to conduct the internships abroad but only some students follow this option. Some Master's students do their thesis outside Bahrain and some research assistants are pursuing PhD degrees abroad. Fostering internationalisation was not a focus of the education policy in Bahrain but according to UoB, this has changed now and especially the College of Science is planning to establish international cooperations and to foster students' academic mobility. Students are supported to conduct the internship outside Bahrain, e.g. in the neighbouring Council for the Arab States of the Gulf (GCC) countries.

Participation in international exchange programmes practically does not exist for undergraduate students despite their high interest. The students confirm during the discussion with the experts that they can conduct the internship abroad. However, they also point out that they wish for more international co-operations and for financial support for long- and short-term stays abroad. The lack of financial support hinders students from joining the outbound programmes.

The experts understand these restrictions; however, they recommend increasing the effort to further internationalising UoB by establishing international exchange programmes for the College of Science and by providing scholarships. In addition, the experts see that most of the faculty members have international contacts, which can be used for establishing more international co-operations. It is also possible for students and teachers to apply to international organisations like the German Academic Exchange Council (DAAD) for receiving funds for stays abroad.

The experts emphasize that it is very useful for students to spend some time abroad already during their Bachelor's studies to get to know other educational systems and to enhance their job opportunities.

In summary, the experts emphasise that with respect to academic mobility there is still room for improvement.

Criterion 1.4 Admission requirements

Evidence:

- Self-Assessment Reports
- UoB Study and Exams Regulations
- Webpage UoB: https://www.uob.edu.bh/
- Discussions during the audit

Preliminary assessment and analysis of the experts:
According to the Self-Assessment Reports, admission procedures and policies for new students follow the national regulations in Bahrain. The requirements, schedule, registration venue, and selection test are announced on UoB's webpage and thus accessible for all stakeholders.

Admission requirements for all degree programmes under review are based on three elements: the final grade of the high school degree, result of UoB's general aptitude test, and passing an interview with a teacher from UoB.

As specified on the university's homepage the admission requirements at UoB are:

1. Must have a high school diploma/secondary school certificate with an average of at least 70%.
2. Should apply for admission within two semesters after receiving high school certificate or its equivalent.
3. Take the General Aptitude Test conducted by the University:
4. Successfully pass a personal interview.
5. Should be medically fit.
6. Should have good conduct and behaviour.

However, there are specific admission requirements by each college for its applicants based on the nature of the programme. For example, applicants to the Mathematics programme need to have an overall performance of 80% or above, applicants to the Physics programme of 85% or above, and applicants to the Biology programme of 85% or above to be eligible for admission to the programme. This is based on their "competitive average" (which includes high school GPA and entrance exam marks).

It is also important to note that the number of newly admitted students to the undergraduate programmes depends on the number of available places in each programme. The programmes' capacity is determined by the department based on the available resources such as staff and facilities.

The application to the academic undergraduate programmes is done electronically as detailed on the university website. Specifically, the Deanship of Admission and Registration at the University of Bahrain accepts applications through two channels.

The application to the university undergraduate programmes can be done through Student Information System (SIS) for the following students:

• Bahrainis and non-Bahrainis who are graduates of private schools inside the Kingdom of Bahrain.

• Bahraini and Gulf school graduates from schools outside the Kingdom of Bahrain for the current academic year and the past academic year.

• Students of Nasser Rehabilitation and Vocational Training Center.

On the other hand, the application through Information & eGovernment Authority (IGA) is open for Bahrainis and non-Bahrainis who are graduates of public (government) schools inside the Kingdom of Bahrain of the current academic year and the past academic year.

During the audit, the experts learn that in 2017 UoB has implemented an "Orientation Programme" for all new students. This new programme was introduced to better prepare high school graduates for studying at UoB. It spans over two semesters and focuses on English Language courses (three courses per semester with 13 credit hours). This seems very useful, since the undergraduate programmes at UoB are taught in English and the English proficiency of high school graduates is lacking. In addition, introductory courses in mathematics and in computing are part of the Foundation Programme. All new students need to pass the Foundation Programme before being admitted to the undergraduate programmes. There are only exceptions for high school students with a GPA above 90% or a very high score in the General Aptitude Test. According to UoB's webpage, "the Foundation Program at the University of Bahrain is a mandatory program for students of all undergraduate programs. Applicants are exempted from the Foundation Program if they meet one of the following requirements:

1. Secondary School Score equal to or higher than 90%
2. Overall score in English Language courses undertaken in Secondary School Studies equal to or higher than 90%
3. Evidence of IELTS of 5.5 or TOFEL of 500 and above results taken in the last two years

4. Pass the English language proficiency section of the General Aptitude Test"

The experts consider the implementation of the Foundation Programme very suitable for better preparing new students for studying at UoB by improving their English language skills and thus reducing the failure rate in the first year classes.

All students at UoB have to pay tuition fees. However, the costs for Bahraini students are very low because they are subsidised by the Bahraini government. Tuition fees in the programs of the first period of the undergraduate level are eight dinars (19€) per credit hour, for Bahraini students. For non-Bahraini students, the tuition fee is 80 dinars (190€) per credit hour.

From their discussion with the students, the experts gain the impression that the admission system is very effective and only very motivated and high-performing candidates are admitted. The experts consider the highly selected and motivated students to be one of the strong points of the three undergraduate programmes under review.

In summary, the experts find the terms of admission to be binding and transparent. They confirm that the admission requirements support the students in achieving the intended learning outcomes.

Criterion 1.5 Work load and credits

Evidence:

- Self-Assessment Reports
- Study plans
- UoB Credit Hour Policy
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the experts:
The workload of the degree programmes under review is defined in the study plans. It differs between the Biology programme (129 credit hours), the Physics programme (129 credit hours), and the Mathematics programme (127 credit hours).

UoB has recently (10th March 2024) issued an assigning credit hour policy, which defines and assigns credits for an academic course and programme. The student's workload, which includes contact hours and self-study time, is presented in the course specification form (module description). The workload varies from course to course based on the content, type of assessments, and amount of work given to the students.

UoB calculates the actual workload of the students in hours per semester and divides this number by 10 to calculate the National Learning Hours or NQF credits. This number is again divided by four to get the official credit hours per course. The experts point out that it would be very useful to award ECTS points for each course. To this end, UoB should define how many hours of students' workload are needed for one ECTS point, convert the NQF credits in ECTS points, and make that information transparent in the module descriptions, the Transcript of Records, and the Diploma Supplement (see criterion 4.1). However, the experts also notice that for the "Internship" and the "Final project" not the total amount of National Learning Hours is awarded but the hours are multiplied by 0.5 respectively 0.45. This is determined in the UoB credit hour policy. If the NQF credits are converted into ECTS points, these factors should not be applied, because the students' total workload needs to be taken in consideration and not only a fraction of it.

During the audit, the experts notice that the provided statistical information on admission numbers and graduations rates is not understandable. To this end, it would be very useful continually conducting cohort analysis of students (see criterion 5).

In summary, the experts confirm that all three undergraduate programmes have a high but manageable workload.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Self-Assessment Report
- Study plans
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The learning methods applied in the three Bachelor's degree programmes are a combination of teacher-centred learning (TCL) such as classroom teaching/tutorials, demonstrations, and laboratory sessions, and student-centred learning (SCL) such as group discussions, case studies, cooperative and project-based learning, field studies, and laboratory work. Each course can use one or a combination of several teaching and learning methods.

The most common method of learning is class session, with several courses (especially in Biology) having integrated laboratory work. In the Biology programme, almost all core courses include laboratory sessions that represent 60 % of the contact hours in each course.

Lecturers generally prepare presentations to support the teaching process. In addition, several courses include teaching practice sessions (i.e., students presenting teaching practice trials in front of their experts). With individual or group assignments, such as discussions, presentations, or written tasks, students are expected to improve their academic as well as their soft skills. Laboratory work covers laboratory preparation, pre- or post-tests, laboratory exercises, reports, discussions, and presentations. In addition, practical activities should enable students to be acquainted with academic research methods. In the Mathematics and Physics programmes, a variety of teaching and learning methods is applied to ensure the acquisition of the necessary knowledge and skills. This mainly includes theoretical lectures, solving problems, and computer exercises (depending on the nature of the course).

The undergraduate programmes under review are designed to equip students with the knowledge and skills to become proficient in the respective area (mathematics, physics, or biology) and to apply their gained knowledge and skills to solve real-world problems. Students are given the opportunity to engage in experiential learning through the internship and the final project that provide real-world experience. Moreover, the experts acknowledge that homework and laboratory work are essential parts of many courses in the Biology and Physics programmes. Lectures are facilitated by technology using various online platforms like Blackboard and MS Teams, learning through tackling real-world problems, and engaging in projects to foster deeper understanding.

The experts also see that discussions between teachers and students are carried out in social media groups and via an electronic learning platform, allowing direct and real-time communication, also beyond regular lecture and university hours. In addition, some teachers use e-learning elements like online quizzes.

The experts point out that it would be useful to use more e-learning teaching methods for the lectures. This is advantageous because online delivery can scale more easily to accommodate large groups without physical space constraints, which reduces the need for large classrooms, especially for lecture-heavy content. Online teaching methods can include quizzes, forums, simulations, and collaborative tools that enhance engagement and understanding. Students can review online materials as needed, which supports different learning speeds and styles.

In summary, the experts confirm that the study concept of all three undergraduate programmes comprises a variety of teaching and learning forms as well as practical parts that are adapted to the respective subject culture and study format. It actively involves students in the design of teaching and learning processes (student-centred teaching and learning).

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

UoB says in its statement that there is a regulation in place, which allows students to study some of their courses abroad if these courses are equivalent to those offered by the University of Bahrain. As only very few students take this option, the experts recommend to further promote and students' academic mobility and to establish more international co-operations and to provide more scholarships.

The experts see that there are some courses that include presentations and group work in each of the three study programmes. However, students' communication and presentation skills could be further improved.

The experts support the view of the employers and students that students' skills in numerical analysis, mathematical algorithms, and programming should be further strengthened in the Mathematics programme. This would better equip mathematics students with tools to tackle real-world problems using mathematical models.

With respect to the Physics programme, the experts see that starting September 2025, a new course "Scientific Report Writing" is introduced. It introduces students to research methods, but for better preparing the students for conducting the Bachelor's thesis it should not be offered already in the fourth semester and should focus more on research methods.

The experts are glad that the University of Bahrain acknowledges the importance of aligning its credit system with international standards and recognizes the potential benefits of introducing the European Credit Transfer and Accumulation System (ECTS) alongside the existing credit hour system. An initial investigation into the structure and applicability of ECTS has already been conducted by the Quality Assurance and Accreditation Center. Furthermore, the matter was discussed within the University's Quality Assurance Executive Committee to ensure that various academic perspectives from all colleges are represented and considered, on May 12th, 2025. This step reflects the University's commitment to enhancing transparency, academic mobility, and international recognition of its programmes. Additional academic discussions are planned to evaluate the operational and pedagogical implications, including defining the equivalence between ECTS and the expected student workload per credit, in line with international best practices and institutional capabilities.

The experts confirm that UoB has issued Artificial Intelligence Usage Regulation on March 27th 2025. The respective documents was submitted. This regulation should be published on UoB's homepage and the students should be made aware of it. Most importantly, all students should be taught on how correctly using AI.

The experts consider criterion 1 to be mostly fulfilled.

2. Exams: System, concept and organisation

Evidence:

- Self-Assessment Reports
- Module descriptions
- Study and Examination Regulation

Preliminary assessment and analysis of the experts:

The students' performance in courses is evaluated through holding tests and examinations, laboratory work, projects, assignments, and other methods of assessment within the general rules set by the Department Council. At the beginning of the semester, the lecturer announces to his/her students the exam form included in the course plan and the contribution of each exam to the final grade. The academic calendar determines the date of the final exams for each semester. Quizzes and midterm exams are held during the semester.

The following grading scheme is used:

Letter Grade	Grade Points	Grade (Marks)
A	4	100-90
A-	3.67	89-87
B+	3.33	86-84
B	3	83-80
B-	2.67	79-77
C+	2.33	76-74
C	2	73-70
C-	1.67	69-67
D+	1.33	66-64
D	1	63-60
F	0	<60

Table 6: Grading Scheme UoB, Source: SAR UoB

The experts see that a variety of examination forms is used for assessing the intended learning outcomes. In each course, the students can achieve a maximum of 100 points. The teacher may allocate 60% to periodic assessments consisting of assignments, midterm exams, lab reports, quizzes, and projects while the remaining 40% is allocated to the final written examination. The elements used for the grading are described in detail in the syllabus (module descriptions). At the beginning of each semester, students are given the syllabus for their courses. This includes information on the assessment methods used and their contribution to the final grade.

If a student's absence rate in one of the courses reaches 15% of the course's allocated hours, the student is given a written warning. If the student is absent for a period exceeding 25% of the course's hours, the student is considered to have compulsorily withdrawn and fails the course.

Students are informed about the exam results through their account on the university's digital platform, and students have the right to appeal against the results. Specifically, within two weeks of the announcement of the final exam results, students can appeal for the re-marking of their results through the Deanship of Admission and Registration.

If a student fails, she or he usually has to repeat the entire module in the following semester; it is usually not possible to retake just parts of the course or to just retake the final exam. However, mid-term exams can be repeated (remedy), but if a student fails the final exam, she or he has to retake the whole course in the next semester or in the short summer semester. The absence of students in the midterms and finals due to illness or otherwise is remediable by taking the exam later. Students, who cannot attend practical courses for acceptable reasons, can repeat the practicum later; the lecturers are responsible for the arrangement. Students with special needs are provided with support to enable them to participate in the academic activities and exams. There is a fixed period after the announcement of the final grades, during which students can ask for explanations and can appeal their grades.

Every student in the three undergraduate programmes is required to do a final project (Bachelor's thesis). The Bachelor's thesis is a scientific work report written by students in the Bachelor's programme that focuses on a specific topic and usually consists of literature study, practical research, data analysis and presentation in figures or tables, and writing the thesis under the supervision of a teacher. Both the student and his /her supervisors might decide the topic and content of the project. In many cases, the lecturers offer particular topics connected to their research.

Relevant rules for organizing and conducting examination, assessment criteria, procedures in case of re-sits, disability compensation measures, proceedings in case of illness and other mitigating circumstances are transparently put into legal regulations. Students and lecturers confirm in discussions that both sides are aware of the regulations, and the experts have the impression that this system is operative with the aim to meet the requirements of the students as far as possible. In discussions, students describe the organization of examinations as transparent and responsive to their needs. This judgment explicitly includes the policy of retaking the course in the case of a failure.

By studying the Self-Assessment Reports and from discussions during the audit, the experts gain the impression that the methods used by the teaching staff at the College of Science for assessing learning outcomes are appropriate. The examination methods depend on the subject and the intended learning outcomes and range from mid-term and final examinations, laboratory works to subject-specific assignments and projects. The exams are usually written exams (e.g. quizzes, essay questions, calculation problems, or multiple-choice questions); there are only a few oral exams, for example for presenting the final project.

The students confirm during the discussion with the experts that all rules and regulations regarding exams, calculation of grades and pass rates as well as scheduling and re-sits are clear to them and are transparently described.

The students appreciate that there are several short exams instead of one big exam and confirm that the exam load is appropriate and they are well informed about the examination schedule, the examination form, and the rules for grading.

The experts also inspect a sample of examination papers and final theses and are overall satisfied with the general quality of the samples.

In summary, the experts confirm that the different forms of examination used are competence-oriented and are suitable overall for verifying the achievement of the intended learning outcomes as specified in the respective module descriptions. The form of examination is determined individually for each course and published in the respective module description. The forms of examination are based on the main content of the modules and the level is appropriate for the respective degree programme.

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

The experts thank UoB for explaining that if a Student fails, she or he usually has to repeat the entire module in the following semesters; it is usually not possible to retake just parts of the course, except if the course has a lab part and the student obtained at least 70% in the lab, then the student is exempted from repeating the lab and can adopt the previous lab grade. The absence of students in the midterms and finals due to illness or other accepted excuses is remediable by taking the exam later. Students with special needs are provided with support to enable them to participate in the academic activities and exams. There is a fixed period after the announcement of the final grades, during which students can ask for explanation and can appeal their grades.

The experts consider criterion 2 to be fulfilled.

3. Resources

Criterion 3.1 Staff and Staff Development

Evidence:

- Self-Assessment Reports
- Staff Handbooks
- Study plans
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the experts:
At UoB, the staff members have different academic positions. There are professors, associate professors, assistant professors, and lecturers. The academic position of each staff member is based on research activities, publications, academic education, supervision of students, and other supporting activities. For example, a full, an associate, or an assistant professor needs to hold a PhD degree.

The majority of the staff members are Bahraini and hold permanent positions; employment contracts for the non-Bahraini teachers are limited to two years and, thus, need to be renewed regularly.

In the academic year 2022-2023, there were 21 academic staff members in the Biology Department. This includes one full professor, six associate professors, nine assistant professors, and one lecturer. In addition, there are two teaching and research assistants, two assistants on leave, as well as six technicians, who assist the teachers in the laboratories. The ratio of faculty to students in the academic year 2022/23 was 1: 37.

The composition of the teaching staff in the Biology programme according to their academic position is shown in the following table:

	Bahraini				Non-Bahraini				
	Full Time	Part Time	On study Leave	New recruitment	Full Time	Part Time	On study Leave	New recruitment	Total
Professor	1	0	0	0	0	0	0	0	1
Associate Professor	4	0	0	0	2	0	0	0	6
Assistant Professor	4	1	0	0	3	1	0	0	9

Senior Lecturer, Lecturer	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Instructors	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Graduate Assistant A/B	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**4**
Support faculty from other departments	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total	**12**	**1**	**2**	**0**	**5**	**1**	**0**	**0**	**21**

Table 7: Number and Academic Rank of Teachers in the Biology Programme, Source: SAR UoB

According to the Self-Assessment Report, there are 26 academic staff members (16 full time and 10 part-time) in the Mathematics Department, among whom 22 hold doctoral degrees. There are two professors, six associate professors, while assistant professors make up 13 of the faculty members. However, some faculty members were working on their applications for promotion to the rank of associate professor or full professor.

Out of the seventeen full-time faculty members in the Department of Mathematics, seven have earned the fellowship of Higher Education Academy (HEA) by fulfilling the requirements of the professional development programmes offered by Unit of Teaching Excellence and Leadership (UTEL) at the university. Other faculty members have attended teaching and learning workshops offered by UTEL and other scientific activities organized by the university or by other institutions.

More than 60% of the full-time faculty members are holders of Postgraduate Certificate in Academic Practice (PCAP). The PCAP program spans over an entire academic year and is offered in-house (i.e. at the University of Bahrain) by Unit of Teaching Excellence and Leadership. PCAP graduates can then apply for HEA fellowship to be professionally recognised by the Higher Education Academy (HEA), UK.

The composition of the teaching staff in the Mathematics programme according to their academic position is shown in the following table:

	Bahraini				**Non-Bahraini**				
	Full Time	**Part Time**	**On study Leave**	**New recruitment**	**Full Time**	**Part Time**	**On study Leave**	**New recruitment**	**Total**
Professor	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**
Associate Professor	**2**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**6**
Assistant Professor	**5**	**4**	**0**	**0**	**4**	**0**	**0**	**0**	**13**

Senior Lecturer, Lecturer	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**4**
Instructors	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Graduate Assistant A/B	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Support faculty from other departments	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total	**8**	**8**	**0**	**0**	**8**	**2**	**0**	**0**	**26**

Table 8: Number and Academic Rank of Teachers in the Mathematics Programme, Source: SAR UoB

According to the Self-Assessment Report, there are 20 academic staff members (17 full time and three part-time) in the Physics Department. This includes two professors, six associate professors, while assistant professors make up nine of the faculty members.

The composition of the teaching staff in the Physics programme according to their academic position is shown in the following table:

	Bahraini				**Non-Bahraini**				
	Full Time	**Part Time**	**On study Leave**	**New recruitment**	**Full Time**	**Part Time**	**On study Leave**	**New recruitment**	**Total**
Professor	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**
Associate Professor	**1**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**6**
Assistant Professor	**6**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**9**
Senior Lecturer, Lecturer	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Instructors	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
Graduate Assistant A/B	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Support faculty from other departments	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total	**9**	**3**	**0**	**0**	**8**	**0**	**0**	**0**	**20**

Table 9: Number and Academic Rank of Teachers in the Physics Programme, Source: SAR UoB

In addition to the academic staff members, the College of Science employ several non-academic personnel such as librarians, technicians (laboratory staff), and administrative staff. The role of laboratory technicians is to assist lecturers in carrying out practical activities and helping to prepare research experiments (starting from laboratory setup, materials preparation, equipment use, and maintenance).

Details of the academic qualifications of the teachers are described in the staff handbook, which is accessible via the webpage of the respective degree programme.

The experts discuss with UoB's management how new staff members are recruited. They learn that every year the departments announce their vacancies to the Dean of the College of Science. When the request is approved by the Dean of the College of Science and subsequently by the University Council, the Personnel Department advertises job vacancies in national and international newspapers and on the internet. The Personnel Department receives the applications of the candidates, which will be forwarded to the Chairperson of the respective department for review. A selection committee will examine the applications of the candidates in terms of their qualification, field of research, publications, and work experience. The selection committee prepares a short list that ranks the candidates, which are requested for an interview. The final appointment of the selected candidate needs to be approved by the Department Council followed by the College of Science Council and the University Council.

One way to recruit new teachers is to send promising Master's students from UoB abroad to complete their PhD and then to hire them as teachers when they are finished. Nevertheless, UoB also hires graduates from other universities. Vacancies are announced nationally and internationally, so UoB gets applications from numerous countries.

During the audit, the experts inquire how high the teaching load is and if enough opportunities are offered to the academic staff members to conduct research activities. They learn that teachers at the College of Science have a teaching load of 12 to 15 hours per week, if they work full time. However, compensating from one semester to another is currently not possible. The experts think that it would be useful to be more flexible in this respect and that compensating a higher teaching load in one semester by a lower one in the next semester would be a good idea.

In addition, the experts recommend to use larger lecture halls for lectures with a large number of students, e.g. for the introductory lectures in biology. Currently, the basic biology courses are taught in small lecture rooms and the same lecture has to be given five times. Using a large lecture hall instead of splitting students into smaller groups can be useful for reducing the teaching load. One teacher delivers the lecture once, saving time and effort compared to repeating the same content multiple times for smaller groups. This way, all students receive the same message, reducing the risk of variation in content or quality between sessions. Additionally, more e-learning teaching methods for these courses should be introduced, which would reduce the need for large classrooms (see criterion 1.6.)

Within the last few years, the number of faculty members in the College of Science has decreased due to retirement while on the other hand the number of students has been increasing significantly, especially in the Biology Department. The university could not hire any new full time academic staff members for the last two years. For this reason, the average teaching load has risen and the teacher to student ratio has dropped. In addition, teachers at the College of Science have to spend more and more time on teaching students from other colleges (e.g. engineering). As a result, academic staff members have less and less time for their students and research activities. For this reason, the experts expect that the vacant positions in all three departments be reoccupied as soon as possible. The experts see that UoB is aware of this problem and tries to solve it and has now proposed to the government to hire 400 new staff members (350 teachers and 50 technicians), within the next few years. The experts strongly support this plan, because it is apparent that the College of Science is understaffed and that the teachers' total workload is very high.

In summary, the experts confirm that the composition, scientific orientation and qualification of the teaching staff are suitable for successfully implementing and sustaining the degree programmes.

Staff Development

New faculty members are encouraged to take a one-year in-campus Postgraduate Certificate in Academic Practice (PCAP). Senior faculty members are encouraged to attend workshops prepared by the Continuous Professional Development (CPD) programme at UoB. In addition, specialized workshops based on the needs of teachers are offered. For instance, the Quality Assurance and Accreditation Centre organizes workshops for staff members concerned with quality assurance. Finally, faculty members can attend national and international conferences, seminars and workshops.

The CPD programme offers the faculty members the option of achieving professional recognition by the Higher Education Academy (HEA) for their recent teaching activities and related research. Throughout the programme, the faculty members will be supported through a mentorship programme and a series of workshops designed to help them acquire the necessary knowledge and skills as well as enrich the learning experience of their students.

UoB provides its academic staff members several opportunities for professional development. For example, through the Deanship of Graduate Studies and Scientific Research (DGSSR), UoB provides financial support to conduct research projects. DGSSR also provides incentives to faculty members for participating in seminars and conferences, publishing in scientific journals or scientific and teaching books.

Financial support to attend international conferences is also provided. In addition, UoB rewards the faculty members for publishing research work in international journals. The faculty members are also encouraged to provide consultancy services to public/private organizations after getting approval from the University Council. The faculty members have also the opportunity to go for sabbatical leave.

During the audit, the experts inquire if the teaching staff has the opportunity to spend time abroad and to participate in international projects. They learn that UoB provides some funds for joining international conferences. The teachers are in general satisfied with the existing opportunities and the available financial support.

The experts discuss with the members of the teaching staff the opportunities to develop their personal skills and learn that the teachers are satisfied with the available qualification programmes, their opportunities to further improve their didactic abilities and to spend some time abroad to attend conferences, workshops or seminars.

In summary, the experts confirm that UoB offers sufficient support mechanisms and opportunities for members of the teaching staff who wish to further develop their professional and teaching skills.

Student Support

UoB offers a comprehensive advisory system for all undergraduate students. At the start of the first semester, every student is assigned to an academic advisor. Each academic advisor is a member of the academic staff and is responsible for several students from her/his classes. He/she is the student's first port of call for advice or support on academic or personal matters.

The role of the academic advisor is to help the students with the process of orientation during the first semesters, the introduction to academic life and the university's community, and to respond promptly to any questions. They also offer general academic advice, make suggestions regarding relevant careers and skills development and help if there are problems with other teachers. During the semester, counselling activities are usually offered three times, namely at the beginning of the semester (before the courses start), mid-semester, and at the end of the semester. The students confirm during the discussion with the experts that they all have an academic advisor, whom they can approach if guidance is needed.

In general, students stress that the teachers are open-minded, communicate well with them, take their opinions and suggestions into account, and changes are implemented if necessary.

Students who prepare their theses have one or more supervisors, who are selected based on the topic of the final project. The role of the final project supervisor is to guide students in accomplishing their final project, e.g., to finish their research and complete their final project report.

All students at UoB have access to the Student Information System (SIS). The students' profiles (student history, study plan, academic transcript and grade point average/GPA, lecturer evaluation, course list) are available via this digital platform.

On university level, the Deanship of Student Affairs is responsible for assisting students during their studies. This includes financial, social, and psychological support. The Center for English Language Learning (CELL) provides help and support for students who need to improve their language skills, and the E-Learning center organises workshops on using the digital platforms at UoB. Finally, UoB has established the Career Counselling Office to prepare students for entering the labour market; it organizes the annual Careers Day, which allows students to meet possible employers.

Both staff and students seem highly involved in the academic activities. Good relationships evidently exist between students and staff members. Reportedly, the teaching staff is highly responsive towards the students' needs and complaints as well. In addition, students have the opportunity to participate in student clubs and social activities.

The experts notice the good and trustful relationship between the students and the teaching staff; there are enough resources available to provide individual assistance, advice and support for all students. The support system helps the students to achieve the intended learning outcomes and to complete their studies successfully and without delay. The students are well informed about the services available to them.

Criterion 3.2 Funds and equipment

Evidence:

- Self-Assessment Reports
- Visitation of the facilities
- Discussions during the audit

Preliminary assessment and analysis of the experts:

In the Department of Biology, there are twelve teaching laboratories, and ten research laboratories. The Department of Physics contains fifteen teaching labs, and six research labs. The Mathematics Department has two computer labs with up to date computers and software packages. The teaching laboratories are designed for 15 to 20 students, whereas the

research labs can accommodate 3 to 5 students. In addition, there are 21 classrooms at the College of Science. Each classroom has a minimum of 35 seats and is equipped with a PC connected to a multimedia projector. Wi-Fi connection is available throughout the College of Science.

As described in the Self-Assessment Reports, the College of Science has 13 classrooms that operate from 8:00 am to 9:00 pm five days a week. In addition, there are nine classrooms in an adjacent building that are used when needed. Moreover, the College has five meeting rooms, which can be used for Department and College Council meetings. The College has a Central Laboratory that contains major research equipment such as an X-ray Diffraction unit (XRD), a Nuclear Magnetic Resonance unit (NMR), a Scanning Electron Microscope (SEM), and a Vibrating Sample Magnetometer (VSE). There are 36 teaching laboratories, 5 computer laboratories, 19 research laboratories, a greenhouse, and a forgery at the College of Science. The college has two lab computers within the Department of Mathematics, which are frequently used to deliver courses with practical parts, where software such as R, MINITAB, MATLAB, and SPSS are already installed.

There is also another building, which represents a shared facility between the College of Science and the College of Information technology. The building has a large lecture hall, which is equipped with two multimedia rooms that are equipped with a roof-fixed multi-media projector and an interactive board which make it ideal for teaching large section of students, hosting conferences, and presentations.

In addition, the College of Science has the Central Laboratory, which is equipped with a diverse array of instruments and technical equipment to support research and education across various scientific disciplines including chemistry, biology, physics, materials science, and renewable energy.

There are six libraries at the university, namely the Central Library, the Engineering Library, the Library for the Colleges of Science and Information Technology, the Law Library, the Bahrain Teachers College Library and the College of Health and Sports Sciences Library. Students can use computers provided by the university in a public section of the central library or use their own laptops. Centralized services, such as learning environments are accessible for registered personal from outside the campus. The university library provides access to relevant databases for conducting scientific research and for educational purposes. Students have access to printed and electronic versions of books as well as contemporary scientific journals. The library is built and equipped for on-site and online retrieval of information and users have access to international literature, scientific journals, e-books, and publications. The students express in discussions their satisfaction with the library and the available literature.

During the visit, the experts inspect a range of laboratory facilities within the College of Science. This includes general laboratories used for introductory biology courses (Biology I and II), as well as more specialized labs such as the Anatomy Lab, Microbiology Lab, Environmental and Algae Lab, as well as dedicated research laboratories. Although the laboratories are relatively small in capacity (accommodating around 15 students), they are well suited to the department's current student enrolment. Instructors have adopted an effective scheduling system that divides students into two sessions, allowing each group sufficient time and space to conduct experiments comfortably.

The laboratories are generally clean, well ventilated, and receive ample natural light, with the exception of one lab currently undergoing maintenance, as reported by the technical staff. Safety equipment is visibly present, including fire extinguishers, fume hoods, and first aid kits. Safety protocols and instructional signage are clearly displayed, and both students and technicians appear to adhere diligently to laboratory safety regulations and proper attire.

The laboratories are adequately equipped with modern instruments in sufficient quantity to support the learning objectives of the courses. Furthermore, the department facilitates undergraduate research by supporting graduation projects and coordinating with external institutions when students require access to specialized equipment not available in-house.

Each laboratory is equipped with a projector to support instructional delivery; however, the integration of digital tools and e-learning resources remains limited and represents an area with room for future enhancement. The laboratory equipment available for practical courses, e.g. course microscopes, is up-to-date and of suitable quality. Increasing the number available would make it possible to establish smaller groups with a maximum of two people. With regard to teaching modern methods of micro- and molecular biology, the purchase of real-time PCR equipment would enable further updating of the experiments in the practical courses. One additional observation is that the research laboratories have wooden workbenches, which the experts recommend replacing with more chemically resistant materials to align with safety standards and best practices.

The recent evaluation of the teaching laboratories at the Physics Department highlights the necessity for equipment maintenance and modernisation. While the current facilities support instructional activities, though outdated, modern laboratory tools not only enhance precision but also enrich the students' learning experience by providing them with hands-on exposure to current technologies, which is essential for developing their skills and for their preparedness for the job market. The need for maintenance in Central Laboratory for instruments such as the scanning electron microscope and the nuclear magnetic resonance spectrometer is present. The teaching laboratories should maintain functional and up-to-date equipment to ensure the quality of degree programmes. Therefore, implementing a

structured maintenance procedure and allocating funds for equipment upgrades are essential steps toward enhancing the educational and research capabilities of the Physics programme.

Basic funding of the undergraduate programmes and the facilities is provided by UoB and the College of Science. The financial sources are government funding (Ministry of Finance), which contribute to around 75 % to the total budget, and about 25 % are derived from other revenues (donations, services, tuition fees etc.).

In summary, the expert group judges the available funds, the technical equipment, and the infrastructure (laboratories, library, seminar rooms etc.) to comply – besides the mentioned restrictions – with the requirements for adequately sustaining the degree programmes.

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

The university does not comment directly on this criterion.

The experts consider criterion 3 to be mostly fulfilled.

4. Transparency and documentation

Criterion 4.1 Module descriptions

Evidence:

- Self-Assessment Reports
- Module descriptions
- Homepage Ba Biology: https://science.uob.edu.bh/undergraduate/bachelor-in-biology/
- Homepage Ba Mathematics: https://science.uob.edu.bh/undergraduate/bachelor-in-mathematics/
- Homepage Ba Physics: https://science.uob.edu.bh/undergraduate/bachelor-in-physics/

Preliminary assessment and analysis of the experts:

The experts point out that all stakeholders need to have access to the module descriptions. They suggest publishing the module descriptions on the respective programme's homepage by linking them with the study plan.

After studying the module descriptions of the three Bachelor's degree programmes under review, the experts confirm that they include the information about the persons responsible for each module, the teaching methods, students' workload, the awarded credit hours, the intended learning outcomes, the content, the applicability, the admission and examination requirements, and the forms of assessment, and details explaining how the final grade is calculated. However, the experts point out that it would be very useful to also award ECTS points for each course. To this end, UoB should define how many hours of students' workload are needed for one ECTS point, convert the credit hours in ECTS points, and make that information transparent in the module descriptions, the Transcript of Records, and the Diploma Supplement. Moreover, several module descriptions e.g. for the internship and the final project are missing in the module handbooks. This needs to be corrected.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Self-Assessment Reports
- Sample Transcript of Records for each degree programme
- Sample Diploma Certificate for each degree programme

Preliminary assessment and analysis of the experts:
The experts confirm that the students of the three undergraduate programmes under review receive a Diploma Certificate and a Transcript of Records. No sample Diploma Supplements were submitted.

The Diploma Supplement should follow the internationally recognised European template and should inform about the structure and content of the respective degree programme. Additionally, it should provide information about the individual performance as well as statistical data regarding the final grade, and include information about the composition of the final grade according to the ECTS-Users' guide. This allows the reader to categorise the individual result. A programme specific Diploma Supplement needs to be issued automatically to all graduates.

The experts ask UoB to submit a sample Diploma Supplement, which is aligned with the European template, for each of the three undergraduate programmes.

Criterion 4.3 Relevant rules

Evidence:

- Self-Assessment Reports
- All relevant regulations as published on the university's webpages

Preliminary assessment and analysis of the experts:
The experts confirm that the rights and duties of both UoB and the students are clearly defined and binding. All rules and regulations are published on the university's website and the students receive the course material at the beginning of each semester.

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

The university explains in its statement that they do not issue a Diploma Supplement to students. However, samples of certified graduation documents which are issued by the Registration Office are provided. The experts point out that UoB needs to issue a Diploma Supplement, which should follow the internationally recognised European template, automatically to all graduates. The Diploma Supplement should inform about the structure and content of the respective degree programme. Additionally, it should provide information about the individual performance as well as data regarding the final grade, and include information about the composition of the final grade according to the ECTS-Users' guide. The experts expect to receive sample Diploma Supplements for all three undergraduate programmes in the further course of the accreditation procedure.

The experts confirm that the study plans of each programme are available on the homepage of the College of Science. However, the complete module descriptions are still not available; only short descriptions of each course are included. Therefore, the experts expect UoB to make the complete module descriptions for all courses available to the stakeholders.

The experts consider criterion 4 to be mostly fulfilled.

5. Quality management: quality assessment and development

Evidence:

- Self-Assessment Reports
- Programme Specifications

- Quality Assurance Policy
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The highest academic board at UoB is the University Council, which is headed by the President and responsible for implementing and supervising all academic processes at UoB. In addition, there is the Board of Trustees with external stakeholders (e.g. from the government, public institutions, and companies). The Board of Trustees supervises the university. The Dean is the head of the College of Science with the authority and responsibility for administering all teaching and learning activities within the college. Finally, each department has a Department Head, who is responsible for implementing all educational activities within the respective degree programmes.

The experts discuss the quality management system at UoB with the Heads of Department. They learn that there is an institutional system of quality management aiming at continuously improving the degree programmes.

This system relies on internal as well as external quality assurance. Internal quality assurance encompasses all activities focused on implementing measures for improving the teaching and learning quality at UoB. External quality assurance focuses on both national and international accreditations. Every degree programme in Bahrain has to be accredited by the Education & Training Quality Authority (BQA).

The experts are impressed by UoB's comprehensive quality assurance system; it is built on several layers of responsibility and activity, on university, college and department level. UoB has established the Quality Assurance and Accreditation Center to coordinate and organize all quality related activities, including national and international accreditation of degree programmes.

The quality assurance system at UoB consists of the Quality Assurance and Accreditation Center (QAAC) at university level, the Quality Assurance Office Directors (QAD) at each college, the Quality Assurance Committees (QAC) of each programme, the Program Advisory Committee (PAC), the Student Advisory Committee (SAC), and the Quality Assurance Executive Committee (QAE). This committee is headed by the QAAC director and comprises the President's Advisor for Quality and all Quality Assurance Offices Directors. The quality management system is based on standards and criteria of the National Education and Training Quality Authority (BQA). In addition, there is a Professional Advisory Committee on programme level with external stakeholders from private organisations or companies as members.

Stakeholders of the degree programmes under review are consulted and their feedback is taken into consideration (e.g. offering a minor in astronomy or shifting courses from first

to second semester). Each programme has a Student Advisory Committee and a Program Advisory committee. The PAC members are from governmental institutions and private organisations or companies. The SAC members are elected every year by all the students of the department. The Head of the Department has at least one meeting with each committee every year to discuss programme related issues, for instance the current curriculum and programme outcomes.

The experts see that quality management at UoB is understood as a continuous process for improving the quality of the degree programmes, achieved through internal and external evaluation. Internal assessment of the quality of the degree programmes is mainly provided through student, alumni, and employer surveys. An online students' survey is centrally organised by the university for every course at the end of the semester. The students give their feedback on the courses by filling out a questionnaire online each semester. Students assess various aspects such as students' understanding, lecturer's responsiveness, course delivery, lecturer's proficiency, explanation of course objective, and references in each enrolled course. In case of negative feedback, the Dean of the College of Science talks to the respective teacher, analyses the problems, and offers solutions. Results of the questionnaires are uploaded to the QAC webpage and discussed with the students' advisory committees. There is one Students Advisory Committee for each study programme and one on university level. There is a response rate of 58 % in the questionnaires at the College of Science, which is very high by international standards.

The students confirm during the discussion with the experts that their concerns are taken into account and resolved where possible. To this extent, the panel considers the feedback loops to be closed.

Furthermore, the College of Science conducts a graduate survey with respect to the quality of the degree programmes. This type of feedback is designed to consider changes in the curriculum by the College of Science for matching needs of graduates in terms of job perspectives and plans.

Finally, employers are asked to give their feedback on the qualification profile and employability of graduates from the College of Sciences. For this purpose, employers are members of the PAC who regularly meet with the Heads of Department in order to discuss about further developing the degree programmes to meet the requirements of the job market.

The experts, in summary, consider the quality management system at the College of Science operative and suitable for identifying weaknesses and inappropriate trends and for implementing modifications to improve and strengthen the degree programmes. All stakeholders are involved in the process.

During the audit, the experts notice that the provided statistical information on admission numbers and graduations rates is not understandable. To this end, it would be very useful continually conducting cohort analysis of students. A meaningful cohort analysis of students means systematically observing and analyzing a clearly defined group of students who began their studies at a certain point in time, and following the course of their studies until graduation. This method is very useful in order to make well-founded analysis about study progression as well as about graduation and dropout rates, as well as eventual employment placements.

Another weak point is the experts' observation that administrative procedures (e.g. hiring new staff members, repairing equipment, purchasing new instruments etc.) are all very slow. It would be very useful to speed up the processes. Otherwise, the labs cannot function properly, experiments are disrupted, and the staff members have to absorb the extra workload, which leads to a decline in quality of teaching and research.

In summary, the expert group confirms that the quality management system is suitable to identify weaknesses and to improve the degree programmes. All stakeholders are involved in the process.

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

The experts confirm that a cohort analysis is available through the SIS systems for all programmes. A respective screen shot of the statistics was provided.

The experts consider criterion 5 to be fulfilled.

D Additional Documents

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

- Sample Diploma Supplement for each study programme

E Comment of the Higher Education Institution (19.06.2025)

The University of Bahrain submits the following statement and the respective evidences:

Recommendation as stated in ASIIN draft	Program or responsible body	The UOB response	Evidence Provided
Students' academic mobility is rather low and should be better promoted. The number of international cooperations and scholarships should be increased, and students should be encouraged to spend some time abroad.		The regulation at the university allows students to study some of their courses abroad if these courses are equivalent to those offered by the University of Bahrain. We have attached a recent request made by a student to study calculus II abroad where his request was considered by the department curriculum committee.	**E1**: REQUEST
The employers recommend improving students' communication skills, e.g. by introducing more presentations and group work in the courses.	Bachelor of Science in Mathematics	The course STAT 388: Introduction to Research Methods (the module description is attached) which handles research methods and relevant communication skills was introduced for the developed program in statistics and data science. Indeed, the Department of Mathematics is planning to introduce a similar course to the developed program in mathematics by next year.	**E2**: Course syllabus of STAT 388
	Bachelor of Science in Biology	The courses BIOLS 353, BIOLS 222, BIOLS320, BIOLS 322 and BIOLS 390 are examples of the courses which include presentations and group work assessment.	**E3**: Course syllabi of BIOLs 222 BIOLS 353

			BIOLS 320 BIOLS 322 BIOLS 391
	Bachelor of Science in Physics	The courses PHYSC 425, 391 and 392 are examples of the courses which include presentations and group work assessment.	**E4**: course syllabi of PHYSC 425 PHYSC 391 and 392
Students suggest increasing applied mathematics and programming skills in the mathematics programme.	Bachelor of Science in Mathematics	The field of applied mathematics is covered in the program with two compulsory courses MATHS 383 and MATHS 483 (the module descriptions are attached). However, we could enhance this area further in the developed program. The programming skills are covered in the program with two IT courses, specifically, ITCS 113: Computer Programming I and ITCS 114: Computer Programming II besides the first course in numerical analysis MATHS 331: Numerical Analysis I where students are exposed to the use of computer specialized software. The module descriptions of these courses are attached.	**E5**: Course syllabi of MATHS 383 MATHS 483 MATHS 331 ITCS 113 ITCS 114
To lower the teaching load, it is recommended to use larger lecture halls for lectures with a large number of students, e.g. for		This is indeed the current situation, especially for service course where the department is offering courses for other colleges at the university. There are two auditoriums S50-05 and S50-14 where each can accommodate around 250 students and they are equipped with smartboard to be used for delivering	**E6**: SCEDULE

the introductory lectures in biology and physics. Additionally, more online-teaching and hybrid-teaching methods for these courses should be introduced.		lectures with large number of students. Moreover, the Department of Mathematics is offering some of the service courses online.	
It would be very useful continually conducting cohort analysis of students in order to systematically observe and follow a clearly defined group of students to make well-founded analysis about study progression as well as about graduation and dropout rates.		Cohort Analysis for programs available through SIS systems.	**E7**: screen shoot of students progress in different years.
Module description for senior project and internship course for the three programs.			**E8**: course syllabi of BIOLS 499 BILOS 397 MATHS498 MATHS397 PHYCS 499 PHYCS 397
No sample Diploma Supplements,		The University of Bahrain does not issue this document to students. However, samples of certified graduation	**E9**: Samples of certified

which are aligned with the European template were submitted.		documents which are issued by the Registration office are provided in **E9**.	graduation documents which are issued by the Registration office.
It would be useful to introduce the ECTS in addition to awarding Bahraini credit hours and to include this information in the module descriptions and the transcript of records. To this end, UoB should define how many hours of students' work are required for one ECTS point	QAAC	The University of Bahrain acknowledges the importance of aligning its credit system with international standards and recognizes the potential benefits of introducing the European Credit Transfer and Accumulation System (ECTS) alongside the existing credit hour system. As such, the University is taking this suggestion into consideration. An initial investigation into the structure and applicability of ECTS has already been conducted by the Quality Assurance and Accreditation Center. Furthermore, the matter was discussed within the University's Quality Assurance Executive Committee to ensure that various academic perspectives from all colleges are represented and considered, on May 12th, 2025. This step reflects the University's commitment to enhancing transparency, academic mobility, and international recognition of its programs. Additional academic discussions are planned to evaluate the operational and pedagogical implications, including defining the equivalence between ECTS and the expected student workload per credit, in line with international best practices and institutional capabilities.	

The module descriptions should be available via the university's homepage	Head of Department and QAO at the college of science	The study plan of each program which includes course description for each course in the program, is available on the college website. College of Science - Home - College of Science	
An official AI guideline would be needed, and students should be introduced in correctly using AI.	The office of Vice president of academic programs	The university has issued an AI Usage regulation provided in E10.	**E10:** AI usage regulation.

F Summary: Expert recommendations (07.07.2025)

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

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Biology	With requirements for one year	-	30.09.2031
Ba Mathematics	With requirements for one year	-	30.09.2031
Ba Physics	With requirements for one year	-	30.09.2031

Requirements

For all degree programmes

A 1. (ASIIN 4.1) Make all module descriptions available to all stakeholders, e.g. by publishing them on the programme's webpage.

A 2. (ASIIN 4.2) Automatically issue a Diploma Supplement, which is aligned with the European template, to all graduates.

For the Biology and Physics programmes

A 3. (ASIIN 3.2) Submit a concept and a timetable how to update and increase the number of instruments in the laboratories within the next five years so that students can get hands-on experience with current scientific methods.

Recommendations

For all degree programmes

E 1. (ASIIN 1.3) It is recommended to offer one physics course (physics 101 & physics 102) for physics students and another one for other students from the College of Science.

E 2. (ASIIN 1.3) It is recommended to better support students in finding suitable jobs after graduation, e.g. by organising a job fair especially for the College of Science.

E 3. (ASIIN 1.3) It is recommended to improve students' communication skills, e.g. by introducing more presentations and group work in the courses.

E 4. (ASIIN 1.3) It is recommended to make the official AI usage guideline known to all UoB students and to teach all students on correctly using AI.

E 5. (ASIIN 1.3) It is recommended to further promote students' academic mobility and to establish more international cooperations and to provide more scholarships.

E 6. (ASIIN 1.5) It is recommended to introduce the ECTS in addition to awarding Bahraini credit hours and to include this information in the module descriptions and the transcript of records. UoB should define how many hours of students' work are required for one ECTS point.

E 7. (ASIIN 1.6) It is recommended to use larger lecture halls for lectures with a large number of students, e.g. for the introductory lectures in Biology and Physics. More online-teaching and hybrid-teaching methods for these courses should be introduced.

E 8. (ASIIN 3.1) It is recommended to increase the number of academic staff members because the College of Science is understaffed and the teachers' workload is high.

For the Biology programme

E 9. (ASIIN 3.2) It is recommended to replace the wooden surfaces of the workbenches in the research laboratories.

For the Mathematics programme

E 10. (ASIIN 1.3) It is recommended to improve students' skills in numerical analysis, mathematical algorithms and programming skills, in order to equip mathematics students better with tools to tackle real-world problems using mathematical models.

G Comment of the Technical Committees (18.09.2025)

Technical Committee 10 – Life Sciences (18.09.2025)

Assessment and analysis for the award of the ASIIN seal:

The procedure involved the reaccreditation of the three degree programmes, and significant improvements in infrastructure and technical equipment were evident compared to the first visit. However, one problem remains: there are too few instruments available in the teaching laboratories, meaning that the groups of students conducting experiments together are too large. The other requirements concern the module descriptions and the Diploma Supplement. After a brief discussion, the TC approves the proposed requirements (3) and recommendations (10).

The Technical Committee 10 – Life Sciences recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Biology	With requirements for one year	-	30.09.2031

Technical Committee 12 – Mathematics (10.09.2025)

Assessment and analysis for the award of the ASIIN seal:

The TC agrees with the proposed requirements and recommendations.

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

Degree Programme	ASIIN seal	Subject-specific labels	Maximum duration of accreditation
Ba Mathematics	With requirements for one year	-	30.09.2031

Technical Committee 13 – Physics (05.09.2025)

Assessment and analysis for the award of the ASIIN seal:

The TC suggest changes (marked in yellow) to the wording of recommendations E4 and E7 to enhance clarity and follow the experts' assessment.

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

Degree Programme	ASIIN seal	Subject-specific labels	Maximum duration of accreditation
Ba Physics	With requirements for one year	-	30.09.2031

Recommendations

E 4. (ASIIN 1.3) It is recommended to make the official AI usage guideline known to all UoB students and to teach all students on using AI according to the guideline.

E 7. (ASIIN 1.6) It is recommended to use larger lecture halls for lectures with a large number of students, e.g. for the introductory lectures in Biology and Physics. As an additional measure, more online-teaching and hybrid-teaching methods for these courses could be introduced.

H Decision of the Accreditation Commission (26.09.2025)

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

The Accreditation Commission discusses the procedures and decides to follow the proposed requirements and recommendations.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Biology	With requirements for one year	-	30.09.2031
Ba Mathematics	With requirements for one year	-	30.09.2031
Ba Physics	With requirements for one year	-	30.09.2031

Requirements

For all degree programmes

A 1. (ASIIN 4.1) Make all module descriptions available to all stakeholders, e.g. by publishing them on the programme's webpage.

A 2. (ASIIN 4.2) Automatically issue a Diploma Supplement, which is aligned with the European template, to all graduates.

For the Biology and Physics programmes

A 3. (ASIIN 3.2) Submit a concept and a timetable how to update and increase the number of instruments in the laboratories within the next five years so that students can get hands-on experience with current scientific methods.

Recommendations

For all degree programmes

E 1. (ASIIN 1.3) It is recommended to offer one physics course (physics 101 & physics 102) for physics students and another one for other students from the College of Science.

E 2. (ASIIN 1.3) It is recommended to better support students in finding suitable jobs after

graduation, e.g. by organising a job fair especially for the College of Science.

E 3. (ASIIN 1.3) It is recommended to improve students' communication skills, e.g. by introducing more presentations and group work in the courses.

E 4. (ASIIN 1.3) It is recommended to make the official AI usage guideline known to all UoB students and to teach all students on-using AI according to the guideline.

E 5. (ASIIN 1.3) It is recommended to further promote students' academic mobility and to establish more international cooperations and to provide more scholarships.

E 6. (ASIIN 1.5) It is recommended to introduce the ECTS in addition to awarding Bahraini credit hours and to include this information in the module descriptions and the transcript of records. UoB should define how many hours of students' work are required for one ECTS point.

E 7. (ASIIN 1.6) It is recommended to use larger lecture halls for lectures with a large number of students, e.g. for the introductory lectures in Biology and Physics. As an additional measure, more online-teaching and hybrid-teaching methods for these courses could be introduced.

E 8. (ASIIN 3.1) It is recommended to increase the number of academic staff members because the College of Science is understaffed and the teachers' workload is high.

For the Biology programme

E 9. (ASIIN 3.2) It is recommended to replace the wooden surfaces of the workbenches in the research laboratories.

For the Mathematics programme

E 10. (ASIIN 1.3) It is recommended to improve students' skills in numerical analysis, mathematical algorithms and programming skills, in order to equip mathematics students better with tools to tackle real-world problems using mathematical models.

Appendix: Programme Learning Outcomes and Curricula

According to the Self-Assessment Report, the following **Learning Outcomes** shall be achieved by the Bachelor's degree programme Biology:

PEO 1: Enter the marketplace successfully and secure employment in the fields of life/ biological sciences, environment, and health.

PEO 2: Join and compete successfully graduate level studies or professional school programs (medical school).

PEO 3: Utilize ethically and positively their learned knowledge and skills to serve their community and contribute to its advancement in the relevant field.

PILO a: Illustrate a broad spectrum of knowledge in the major fields of science.

PILO b: Recognize the relationship between structure and function at the molecular, cellular and organismal level.

PILO c: Apply biological knowledge and techniques in the fields of biology.

PILO d: Communicate concepts in biology through the proper use of the vocabulary of the discipline.

PILO e: Analyze issues pertaining to biological sciences.

PILO f: Integrate IT skills, humanities, and social studies throughout biology program.

PILO g: Work independently and as a member of a team.

PILO h: Integrate ethics and self-development skills throughout the educational and professional life.

PILO i: Acquire the basic skills of scientific research in the various fields of biology.

The following **curriculum** is presented:

Year 1- Semester 1

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
ARAB 110	Arabic Language Skills	3	0	3	UR	None	No	Yes	Arabic Language and Islamic Studies
BIOLS 102	General Biology I	3	2	4	CR	None	Yes	Yes	Biology
CHEMY 101	General Chemistry I	3	2	4	CR	None	No	Yes	Chemistry
MATHS 131	Calculus I	4	0	4	CR	None	No	Yes	Mathematics
ENGL 125	English for Science I (SCI)	3	0	3	CR	None	No	Yes	English language and Literature

Year 1- Semester 2

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
BIOLS 103	General Biology II	3	2	4	MR	BIOLS 102	Yes	Yes	Biology
ITCS 106	Computer Programming I	3	2	4	CR	None	No	Yes	Computer Science
HIST 122	Modern History of Bahrain and Citizenship	3	0	3	UR	None	No	Yes	Social Sciences
PHYCS 101	General Physics I	3	2	4	CR	None	No	Yes	Physics
ENGL 126	English for Science II (SCI)	3	0	3	CR	ENGL 125	No	Yes	English language and Literature

Year 2- Semester 3

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
BIOLS 233	Invertebrate Zoology	2	2	3	MR	BIOLS 103	Yes	Yes	Biology
BIOLS 250	Microbiology	2	2	3	MR	BIOLS 103	Yes	Yes	Biology
CHEMY 102	General Chemistry II	3	2	4	MSR	CHEMY 101	No	Yes	Chemistry
ENGL 226	Scientific Report Writing	3	0	3	MSR	ENGL 126	No	Yes	English language and Literature
ISLM 101	Islamic Culture	3	0	3	UR	None	No	Yes	Arabic Language and Islamic Studies

Year 2- Semester 4

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
BIOLS 222	Plant Morphology	2	2	3	MR	BIOLS 103	Yes	Yes	Biology
BIOLS 234	Chordate Zoology	2	2	3	MR	BIOLS 103	Yes	Yes	Biology
CHEMY 223	Organic Chemistry for Biological Sciences	2	2	3	MSR	CHEMY 102	No	Yes	Chemistry
STAT 272	Introduction to Biostatistics	2	2	3	MSR	None	No	Yes	Mathematics
GSE XXX	Humanities / Social Science	X	X	3	GSE	None	No	Yes	College of Arts

Year 3- Semester 5

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
BIOLS 300	Cell Biology	2	2	3	MR	BIOLS 103	Yes	Yes	Biology
BIOLS 340	General Ecology	2	2	3	MR	BIOLS 103	Yes	Yes	Biology
BIOLS 360	Principles of Genetics	2	2	3	MR	BIOLS 250	Yes	Yes	Biology
HRLC 107	Human Rights	2	0	2	UR	None	No	Yes	Legal and Human Rights Clinic
BIOLS 3XX	Major Elective 1	X	X	3	ME	As per ME list	Yes	Yes	Biology
BIOLS 3XX	Major Elective 2	X	X	3	ME	As per ME list	Yes	Yes	Biology

Year 3- Semester 6

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
BIOLS 315	Biochemistry	2	2	3	MR	BIOLS 102 & CHEMY 223	Yes	Yes	Biology
BIOLS 320	Plant Physiology	2	2	3	MR	BIOLS 300	Yes	Yes	Biology
BIOLS 372	Human Physiology	2	2	3	MR	BIOLS 300	Yes	Yes	Biology
BIOLS 380	Marine Biology	2	2	3	MR	BIOLS 340	Yes	Yes	Biology
BIOLS 390	Research Methods	0	6	3	MR	ENGL 226 & STAT 272	Yes	Yes	Biology

Training Requirement

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
BIOLS 397	Internship	0	6	3	MR-Training	Completion of 75 Credits	Yes	No	Biology

Year 4- Semester 7

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
BIOLS 391	Skills in Biology	0	6	3	MR	BIOLS 390	Yes	Yes	Biology
BIOLS 404	Biotechnology	2	2	3	MR	BIOLS 250 & BIOLS 360	Yes	Yes	Biology
BIOLS 465	Gene Technology	2	2	3	MR	BIOLS 360	Yes	Yes	Biology
BIOLS 3/4XX	Major Elective 3	X	X	3	ME	As per ME list	Yes	Yes	Biology
BIOLS 3/4XX	Major Elective 4	X	X	3	ME	As per ME list	Yes	Yes	Biology

Year 4- Semester 8

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
BIOLS 451	Immunology	2	2	3	MR	BIOLS 250	Yes	Yes	Biology
BIOLS 499	Senior Research Project	0	6	3	MR	BIOLS 391	Yes	No	Biology
BIOLS 4XX	Major Elective 5	X	X	3	ME	As per ME list	Yes	Yes	Biology
BIOLS 4XX	Major Elective 6	X	X	3	ME	As per ME list	Yes	Yes	Biology
BIOLS 4XX	Major Elective 7	X	X	3	ME	As per ME list	Yes	Yes	Biology

Major Elective Courses

Plant Science

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
BIOLS 321	Plant Anatomy	2	3	3	ME	BIOLS 103	Yes
BIOLS 322	Economic Botany	3	0	3	ME	BIOLS 222	Yes
BIOLS 324	Plant Taxonomy	2	3	3	ME	BIOLS 222	Yes
BIOLS 325	Phycology	2	3	3	ME	BIOLS 222	Yes
BIOLS 423	Plant Growth Hormones	2	3	3	ME	BIOLS 300 & BIOLS 320	Yes
BIOLS 424	Algal Ecology	2	3	3	ME	BIOLS 340	Yes
BIOLS 425	Terrestrial Plant Ecology	2	3	3	ME	BIOLS 340	Yes
BIOLS 426	Horticulture	2	3	3	ME	BIOLS 320	Yes
BIOLS 427	Stress Physiology	2	3	3	ME	BIOLS 320	Yes
BIOLS 428	Plant Biodiversity	2	3	3	ME	BIOLS 222 & BIOLS 340	Yes
BIOLS 457	Plant Pathology	2	3	3	ME	BIOLS 250	Yes
BIOLS 467	Plant Tissue Culture	2	3	3	ME	BIOLS 300	Yes

Applied Microbiology and Biotechnology

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
BIOLS 321	Plant Anatomy	2	3	3	ME	BIOLS 103	Yes
BIOLS 322	Economic Botany	3	0	3	ME	BIOLS 222	Yes
BIOLS 324	Plant Taxonomy	2	3	3	ME	BIOLS 222	Yes
BIOLS 325	Phycology	2	3	3	ME	BIOLS 222	Yes
BIOLS 423	Plant Growth Hormones	2	3	3	ME	BIOLS 300 & BIOLS 320	Yes
BIOLS 424	Algal Ecology	2	3	3	ME	BIOLS 340	Yes
BIOLS 425	Terrestrial Plant Ecology	2	3	3	ME	BIOLS 340	Yes
BIOLS 426	Horticulture	2	3	3	ME	BIOLS 320	Yes
BIOLS 427	Stress Physiology	2	3	3	ME	BIOLS 320	Yes
BIOLS 428	Plant Biodiversity	2	3	3	ME	BIOLS 222 & BIOLS 340	Yes
BIOLS 457	Plant Pathology	2	3	3	ME	BIOLS 250	Yes
BIOLS 467	Plant Tissue Culture	2	3	3	ME	BIOLS 300	Yes

Marine Biology

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
BIOLS 383	Oceanography	2	3	3	ME	BIOLS 380	Yes
BIOLS 385	Marine Pollution	2	3	3	ME	BIOLS 250 & BIOLS 340	Yes
BIOLS 429	Marine and Fresh water Botany	2	3	3	ME	BIOLS 222 & BIOLS 340	Yes
BIOLS 481	Fish and Fisheries	2	3	3	ME	BIOLS 234	Yes
BIOLS 482	Marine Ecology of the Arabian Gulf	2	3	3	ME	BIOLS 340	Yes

Molecular Biology and Genetic Engineering

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
BIOLS 460	Human Genetics	3	0	3	ME	BIOLS 360	Yes
BIOLS 461	Plasmid and Recombinant DNA	2	3	3	ME	BIOLS 250 & BIOLS 360	Yes
BIOLS 463	Theme course in Molecular Biology	3	0	3	ME	BIOLS 360 & BILOS 465	Yes
BIOLS 468	Animal Tissue Culture	2	3	3	ME	BIOLS 300	Yes
BIOLS 464	Molecular Biology of Oncogenes	3	0	3	ME	BIOLS 360 & BILOS 465	Yes
BIOLS 466	Molecular Mechanisms of Bacterial Pathogenesis	2	3	3	ME	BIOLS 250 & BIOLS 360	Yes

Human and Animal Physiology, Nutrition and Zoology

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
BIOLS 330	Parasitology	2	3	3	ME	BIOLS 232	Yes
BIOLS 333	Invertebrate Zoology II	2	3	3	ME	BIOLS 232	Yes
BIOLS 334	Comparative Chordate	2	3	3	ME	BIOLS 234	Yes
BIOLS 371	Principles of Nutrition	2	3	3	ME	BIOLS 102	Yes
BIOLS 402	Organic Evolution	3	0	3	ME	BIOLS 340 & BIOLS 360	Yes
BIOLS 432	Embryology	2	3	3	ME	BIOLS 234	Yes
BIOLS 438	Endocrinology	2	3	3	ME	BIOLS 372	Yes
BIOLS 474	Comparative Animal Physiology	2	3	3	ME	BIOLS 372	Yes
BIOLS 471	Nutrition through human life cycle	3	0	3	ME	BIOLS 371	Yes

Other Electives

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
BIOLS 353	Virology	2	3	3	ME	BIOLS 250 & BIOLS 360	Yes
BIOLS 454	Advanced Virology	2	3	3	ME	BIOLS 353	Yes
BIOLS 354	Mycology	2	3	3	ME	BIOLS 222 & BIOLS 250	Yes
BIOLS 433	Entomology	2	3	3	ME	BIOLS 232	Yes
BIOLS 491	Seminar	2	0	2	ME	Department Approval	Yes
BIOLS 341	Principles of Environmental Science	2	3	3	ME	BIOLS 103	Yes
BIOLS 441	Environmental Impact Assessment	2	3	3	ME	BIOLS 340	Yes
BIOLS 442	Conservation Biology	2	3	3	ME	BIOLS 340	Yes
BIOLS 451*	Immunology	2	3	3	ME	BIOLS 250	Yes

According to the Self-Assessment Report, the following **Learning Outcomes** shall be achieved by the Bachelor's degree programme Mathematics:

PLO 1: Work successfully in a career related to mathematics.

PLO 2: Pursue a graduate program in mathematics or a related field.

PLO 3: Use knowledge and skills of mathematics effectively to enhance the society development.

PILO 1: Demonstrate knowledge of core areas of mathematics, statistics, and basic sciences.

PILO 2: Use logical reasoning, formal proof, generalization, and abstraction.

PILO 3: Apply mathematics to real life problems by formulating and solving them and interpreting their solutions.

PILO 4: Employ different mathematical concepts in solving a wide range of problems within mathematics.

PILO 5: Identify the relationship between mathematics and other disciplines.

PILO 6: Communicate effectively within practice.

PILO 7: Integrate technology in solving and understanding mathematical and scientific problems.

PILO 8: Integrate ethics, responsibility, legal and social issues within professional practice.

PILO 9: Perform basic scientific research.

PILO 10: Engage in mathematical lifelong learning through continuous professional development.

The following **curriculum** is presented:

Year 1 – Semester 1									
Course Code	Course Title	Course Hours			Course Type	Pre-Requisite	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
ISLM 101	Islamic Culture	3	0	3	UR	NONE	No	Yes	Arabic and Islamic Studies
ENGL 125	English for Science I (SCI)	3	0	3	CR	NONE	No	Yes	English Language and Literature
ITCS 113	Computer Programming I	3	2	3	CR	NONE	No	Yes	Computer Science
MATHS 131	Calculus I	4	0	4	CR	NONE	Yes	Yes	Mathematics
PHYCS 101	General Physics I	3	2	4	CR	NONE	No	Yes	Physics

Year 1 – Semester 2									
Course Code	Course Title	Course Hours			Course Type	Pre-Requisite	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
ENGL 126	English for Science II (SCI)	3	0	3	CR	EMGL 125	No	Yes	English Language and Literature
PHYCS 102	General Physics II	3	3	4	MSR	PHYCS 101	No	Yes	Physics
ARAB 110	Arabic Language Skills	3	0	3	UR	NONE	No	Yes	Arabic and Islamic Studies
MATHS 132	Calculus II	4	0	4	MR	MATHS 131	Yes	Yes	Mathematics
ITCS 114	Computer Programming II	3	2	3	MSR	ITCS 113	No	Yes	Computer Science

Year 2 – Semester 3									
Course Code	Course Title	Course Hours			Course Type	Pre-Requisite	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
ITCS 214	Data Structures	3	2	3	MSR	ITCS 114	No	Yes	Computer Science
MATHS 233	Calculus III	4	0	4	MR	MATHS 132	Yes	Yes	Mathematics
MATHS 205	Differential Equations	3	0	3	MR	MATHS 132	Yes	Yes	Mathematics
BIOLS 102	General Biology I	3	2	4	CR	NONE	No	Yes	Biology
HIST 122	Modern History of Bahrain and Citizenship	3	0	3	UR	NONE	No	Yes	Social Sciences

Year 2 – Semester 4									
Course Code	Course Title	Course Hours			Course Type	Pre-Requisite	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
CHEMY 101	General Chemistry I	3	2	4	CR	NONE	No	Yes	Chemistry
MATHS 210	Linear Algebra I	3	0	3	MR	MATHS 132	Yes	Yes	Mathematics
MATHS 254	Introduction to Abstract Mathematics	3	0	3	MR	MATHS 132	Yes	Yes	Mathematics
STAT 271	Introduction to Probability	3	0	3	MR	MATHS 131	Yes	Yes	Mathematics
GSE XXX	Free Elective Course 1	X	X	3	GSE	NONE	No	Yes	-

Year 3 – Semester 5									
Course Code	Course Title	Course Hours			Course Type	Pre-Requisite	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
MATHS 301	Analysis I	3	0	3	MR	MATHS 254 MATHS 233	Yes	Yes	Mathematics
MATHS 331	Numerical Analysis I	3	2	3	MR	MATHS 132 ITCS 114	Yes	Yes	Mathematics
STAT 371	Probability and Statistics I	3	0	3	MR	MATHS 132 STAT 271	Yes	Yes	Mathematics
MATHS 310	Linear Algebra II	3	0	3	MR	MATHS 254 MATHS 210	Yes	Yes	Mathematics
MATHS 3XX	Major Elective 1 from list 1	3	0	3	ME	As per ME list	Yes	Yes	Mathematics

Year 3 – Semester 6									
Course Code	Course Title	Course Hours			Course Type	Pre-Requisite	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
MATHS 311	Abstract Algebra I	3	0	3	MR	MATHS 210 MATHS 254	Yes	Yes	Mathematics
MATHS 383	Methods of Applied Mathematics I	3	0	3	MR	MATHS 233 MATHS 205	Yes	Yes	Mathematics
MATHS 343	Complex Analysis	3	0	3	MR	MATHS 233	Yes	Yes	Mathematics
MATHS 4XX	Major Elective 2 from list 2	3	0	3	ME	As per ME list	Yes	Yes	Mathematics
HRLC 107	Human Rights	2	0	2	UR	NONE	No	Yes	-

Year 3 – Summer Semester									
Course Code	Course Title	Course Hours			Course Type	Pre-Requisite	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
MATHS 398	Internship	**0**	**0**	**1**	MR	Pass 85 credits	Yes	Yes	Mathematics

Year 4 – Semester 7									
Course Code	Course Title	Course Hours			Course Type	Pre-Requisite	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
MATHS 483	Methods of Applied Mathematics II	3	0	3	MR	MATHS 383	Yes	Yes	Mathematics
MATHS 312	Abstract Algebra II	3	0	3	MR	MATHS 311	Yes	Yes	Mathematics
MATHS 302	Analysis II	3	0	3	MR	MATHS 301	Yes	Yes	Mathematics
MATHS 4XX	Major Elective 3 from list 3	3	0	3	ME	As per ME list	Yes	Yes	Mathematics
MATHS3/4XX	Major Elective 4 from list 4	3	0	3	ME	As per ME list	Yes	Yes	Mathematics

Year 4 – Semester 8									
Course Code	Course Title	Course Hours			Course Type	Pre-Requisite	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
MATHS3/4XX	Major Elective 5 from list 4	3	0	3	ME	As per ME list	Yes	Yes	Mathematics
MATHS3/4XX	Major Elective 6 from list 4	3	0	3	ME	As per ME list	Yes	Yes	Mathematics
MATHS3/4XX	Major Elective 7 from list 4	3	0	3	ME	As ME per list	Yes	Yes	Mathematics
MATHS 498	Senior Project	0	6	3	MR	Pass 85 credits	Yes	Yes	Mathematics
GSE XXX	Free Elective Course 2	X	X	3	GSE	NONE	No	Yes	-

Major Elective List 1

List 1

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
MATHS 353	Introduction to Mathematical Cryptography	3	0	3	ME	MATHS 254	Yes
MATHS 354	Introduction to Graph Theory	3	0	3	ME	MATHS 254 and S 210	Yes

List 2

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
MATHS 445	Introduction to Dynamical Systems	3	0	3	ME	MATHS 205 and 210	Yes
MATHS 462	Partial Differential Equations	3	0	3	ME	MATHS 205 and 233	Yes

List 3

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
MATHS 455	Metric and Topological Spaces	3	0	3	ME	MATHS 301	Yes
MATHS 454	Elementary Differential Geometry	3	0	3	ME	MATHS 301 and 310	Yes

List 4

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
MATHS 305	History of Mathematics	3	0	3	ME	ENGL 126 and 233	Yes
MATHS 307	Introduction to Lie Group for Differential Equations	3	0	3	ME	MATHS 205	Yes
MATHS 332	Numerical Analysis II	3	0	3	ME	MATHS 331 and 210	Yes
MATHS 352	Number Theory	3	0	3	ME	MATHS 254 and 210	Yes
MATHS 488	Mathematics of Signal Representations	3	0	3	ME	MATHS 383 and 310	Yes
MATHS 403	Analysis of Functions of Several Variables	3	0	3	ME	MATHS 302	Yes
MATHS 405	Theory of Differential Equations	3	0	3	ME	MATHS 205	Yes
MATHS 453	Euclidean and Non-Euclidean geometries	3	0	3	ME	MATHS 254 and 310	Yes
MATHS 462	Partial Differential Equations	3	0	3	ME	MATHS 205 and 233	Yes
MATHS 371	Theory of Interest	3	0	3	ME	MATHS 132	Yes
MATHS 377	Fundamentals of Data Science	2	2	3	ME	STAT 371	Yes

According to the Self-Assessment Report, the following **Learning Outcomes** shall be achieved by the Bachelor's degree Physics:

Program Educational Objectives (PEOs):

Graduates who complete the B.Sc. in Physics Program are expected to demonstrate the ability to [ev.01]:

PEO 1. Pursue a successful career in a physics related field.

PEO 2. Qualify for graduate studies and be engaged in life-long learning.

PEO 3. Exhibit ethical and scientific conduct and contribute positively to society.

Program intended learning outcomes (PILOs):

The program's Intended Learning Outcomes outline the skills, knowledge, and traits students develop as they advance through the curriculum. By the time of graduation, the B.Sc. in Physics program empowers students to [ev.01]:

PILO a) Apply knowledge of Science and Mathematics to related disciplines.

PILO b) Identify, formulate and solve problems in physics.

PILO c) Design and implement computational models for physical systems.

PILO d) Conduct experiments working independently or in collaboration with others.

PILO e) Interpret and analyze data to reach sound conclusions.

PILO f) Use information technology to search and locate scientific information.

PILO g) Conduct basic scientific research.

PILO h) Communicate scientific information and conclusions effectively to a broad audience.

PILO i) Recognize recent developments in physics.

PILO j) Understand professional, ethical and social issues and responsibilities.

PILO k) Acquire self-learning skills to ensure lifelong learning.

The following **curriculum** is presented:

Year 1- Semester 1

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
ARAB 110	Arabic Language Skills	3	0	3	UR	None	No	Yes	
CHEMY 101	General Chemistry I	3	3	4	CR	None	No	Yes	
ENGL 125	English for Science I (SCI)	3	0	3	CR	None	No	Yes	
MATHS 121	Calculus and Analytic Geometry I	3	0	3	CR	None	No	Yes	
PHYCS 101	General Physics I	3	3	4	CR	None	Yes	Yes	

Year 1- Semester 2

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
ITCS 113	Computer Programming I	3	2	3	CR	None	No	Yes	
HIST 122	Modern History of Bahrain and Citizenship	3	0	3	UR	None	No	Yes	
MATHS 122	Calculus and Analytic Geometry II	4	0	4	MSR	MATHS 121	No	Yes	
PHYCS 102	General Physics II	3	3	4	MR	PHYCS 101	Yes	Yes	
ENGL 126	English for Science II (SCI)	3	0	3	CR	ENGL 125	No	Yes	

Year 2- Semester 3

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
BIOLS 102	General Biology I	3	3	4	CR	None	No	Yes	
ISLAM 101	Islamic Culture	3	0	3	UR	None	No	Yes	
MATHS 211	Linear Algebra	3	0	3	MSR	MATHS 121	No	Yes	
PHYCS 209	Bulk Properties of Matter	3	2	3	MR	PHYCS 101	Yes	Yes	
PHYCS 222	Modern Physics	3	2	3	MR	PHYCS 102	Yes	Yes	

Year 2- Semester 4

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
CHEMY 102	General Chemistry II	3	3	4	MSR	CHEMY 101	No	Yes	
MATHS 205	Differential Equations	3	0	3	MSR	MATHS 122	No	Yes	
PHYCS 221	Methods of Mathematical Physics I	3	0	3	MR	PHYCS 102 & MATHS 122	Yes	Yes	
PHYCS 241	Introductory Electronics	3	2	3	MR	PHYCS 102	Yes	Yes	
GSE XXX	Humanities / Social Science	X	X	3	GSE	None	No	Yes	

Year 3- Semester 5

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
HRLC 107	Human Rights	2	0	2	UR	None	No	Yes	
PHYCS 314	Classical Mechanics	3	2	3	MR	PHYCS221 or MATHS 205	Yes	Yes	
PHYCS 326	Quantum Mechanics I	3	2	3	MR	PHYCS 222	Yes	Yes	
PHYCS 331	Physics Optics	3	2	3	MR	PHYCS 102	Yes	Yes	
PHYCS 348	Electromagnetic Theory	3	2	3	MR	PHYCS 221 or MATHS 205	Yes	Yes	
PHYCS 365	Thermal Physics	3	2	3	MR	PHYCS 209	Yes	Yes	

Year 3- Semester 6

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
PHYCS 324	Atomic and Molecular Physics	3	2	3	MR	PHYCS 222	Yes	Yes	
PHYCS 351	Solid State Physics I	3	2	3	MR	PHYCS 222	Yes	Yes	
PHYCS 3/4xx	Major Elective 1	X	X	3	ME	As per ME list	Yes	Yes	
PHYCS 3/4xx	Major Elective 2	X	X	3	ME	As per ME list	Yes	Yes	
PHYCS 3/4xx	Major Elective 3	X	X	3	ME	As per ME list	Yes	Yes	

Year 4- Semester 7

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
PHYCS 398	Internship	0	0	1	Training	Completion of 75 Credits	Yes	No	
GSE XXX	Free Elective Course 1	X	X	3	GSE	None	No	Yes	
GSE XXX	Free Elective Course 2	X	X	3	GSE	None	No	Yes	
PHYCS 3/4xx	Major Elective 4	X	X	3	ME	As per ME list	Yes	Yes	
PHYCS 3/4xx	Major Elective 5	X	X	3	ME	As per ME list	Yes	Yes	
PHYCS 499	Senior Research Project	0	9	3	MR	Department Approval	Yes	No	

Year 4- Semester 8

Course Code	Course Title	Course Hours			Course Type (as shown in credit hours distribution)	Pre-Requisite; specify if there is grade for completion	Major CGPA	Final Exam (Yes/No)	Department Offering
		LEC	PRAC	CRD					
PHYCS 425	Computational Physics	3	2	3	MR	PHYCS 221 or MATHS 205	Yes	No	
PHYCS 432	Laser Physics	3	2	3	MR	PHYCS 324 & PHYCS 331	Yes	Yes	
PHYCS 471	Nuclear Physics	3	2	3	MR	PHYCS326	Yes	Yes	
PHYCS 4xx	Major Elective 6	X	X	3	ME	As per ME list	Yes	Yes	
PHYCS 4xx	Major Elective 7	X	X	3	ME	As per ME list	Yes	Yes	