



هيئة جودة التعليم والتدريب
Education & Training Quality Authority
Kingdom of Bahrain - مملكة البحرين

Directorate of Higher Education Reviews Programme Review Report

**Ahlia University
College of Engineering
Bachelor's Degree in Computer and
Communication Engineering
Kingdom of Bahrain**

Site Visit Date: 10 – 12 April 2023

HA079-C3-R079

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Acronyms

ABET	Accreditation Board for Engineering and Technology
ADREG	Admission and Registration Information System
APR	Academic Programme Reviews
AQAC	Accreditation and Quality Assurance Committee
AU	Ahlia University
BSCCE	Bachelor's Degree in Computer and Communication Engineering
BQA	Education & Training Quality Authority
CAQA	Centre for Accreditation and Quality Assurance
CEAB	College External Advisory Board
CILO	Course Intended Learning Outcome
CME	Centre for Measurement and Evaluation
DHR	Directorate of Higher Education Reviews
HEC	Higher Education Council
HEI	Higher Education Institution
ICT	Information and Communication Technology
NQF	National Qualifications Framework
PILO	Programme Intended Learning Outcome
QA	Quality Assurance
SER	Self-Evaluation Report
TLAC	Teaching, Learning and Assessment Committee
TLEP	Teaching and Learning Excellence Plan

I. Introduction

In keeping with its mandate, the Education & Training Quality Authority (BQA), through the Directorate of Higher Education Reviews (DHR), carries out two types of reviews that are complementary. These are: Institutional Reviews, where the whole institution is assessed; and the Academic Programme Reviews (APRs), where the quality of teaching, learning and academic standards are assessed in academic programmes within various colleges according to specific standards and indicators as reflected in its Framework.

Following the revision of the APR Framework at the end of Cycle 1 in accordance with the BQA procedure, the revised APR Framework (Cycle 2) was endorsed as per the Council of Ministers' Resolution No.17 of 2019. Thereof, in the academic year (2019-2020), the DHR commenced its second cycle of programme reviews.

The Cycle 2 APR Review Framework is based on four main Standards and 21 Indicators, which forms the basis of the APR Reports of the Higher Education Institutions (HEIs).

The **four** standards that are used to determine whether or not a programme meets international standards are as follows:

Standard 1: The Learning Programme

Standard 2: Efficiency of the Programme

Standard 3: Academic Standards of Students and Graduates

Standard 4: Effectiveness of Quality Management and Assurance

The Review Panel (hereinafter referred to as 'the Panel') decides whether each indicator, within a standard, is 'addressed', 'partially addressed' or 'not addressed'. From these judgements on the indicators, the Panel additionally determines whether each of the four standards is 'Satisfied' or 'Not Satisfied', thus leading to the Programme's overall judgement, as shown in Table 1 below.

Table 1: Criteria for Judgements

Criteria	Judgement
All four Standards are satisfied	Confidence
Two or three Standards are satisfied, including Standard 1	Limited Confidence
One or no Standard is satisfied	No Confidence
All cases where Standard 1 is not satisfied	

The APR Review Report begins with providing the profile of the Programme under review, followed by a brief outline of the judgement received for each indicator, standard, and the overall judgement.

The main section of the report is an analysis of the status of the programme, at the time of its actual review, in relation to the review standards, indicators and their underlying expectations.

The report ends with a Conclusion and a list of Appreciations and Recommendations.

II. The Programme's Profile

Institution Name*	Ahlia University
College/ Department*	College of Engineering / Computer Engineering Department
Programme/ Qualification Title*	Bachelor's Degree in Computer and Communication Engineering (BSCCE)
Qualification Approval Number	Cabinet of Ministers Decision No. (1626-03) of 2001 Higher Education Council Letter No. (2008/81- م ت أ) of 2008 Higher Education Council Decision No. (93) of Meeting (11/2008) of 2008
NQF Level	8
Validity Period on NQF	5 years from the date of re-validation
Number of Units*	45
NQF Credit	548
Programme Aims*	<ol style="list-style-type: none"> 1. To equip learners with in-depth knowledge and skills necessary to exhibit sustainable competence in the fields of computer and communication engineering in accordance with national and international standards. 2. To enable learners to identify and solve multifaceted problems in their area of specialization with a view to designing, analyzing, implementing and managing efficient solutions germane to current Engineering technologies. 3. To empower learners to successfully pursue careers as computer and communication engineers motivated to engage in research and life-long learning in ways that serve the societal needs. 4. To instill in learners, who contribute productively to society through responsible professional engineering practice, norms of ethical behavior.
Programme Intended Learning Outcomes*	<p>A. Knowledge and Understanding</p> <ul style="list-style-type: none"> - A1. Demonstrate detailed knowledge and understanding of the concepts and required theories of mathematics, science, and

	<p>engineering essential for a specialization in computer and communication engineering.</p> <ul style="list-style-type: none"> - A2. Impart knowledge of established research methods in the field of computer and communication engineering to enable students to grapple with contemporary issues in the field. - A3. Gain appreciation and insight into technical aspects in engaging in engineering practice as a computer and communication engineer. <p>B. Subject-specific skills</p> <ul style="list-style-type: none"> - B1. Demonstrate creativity in solving engineering problems germane to computer and communication engineering. - B2. Conduct engineering experiments in computer and communication system to meet desired needs within realistic engineering constraints using various concept. - B3. Use specialized level of modern engineering tools necessary for engineering practice and experiments in computer and communication engineering. <p>C. Critical-Thinking Skills</p> <ul style="list-style-type: none"> - C1. Use range of approaches to analyse specific computer communication engineering solutions with a view to practical implementation in computer and communication engineering. - C2. Integrate information and concepts within the common understanding of computer and communication engineering to generate cogent conclusions with respect to theoretical and practical issues encountered in computer and communication engineering. - C3. Demonstrate insight and innovative techniques in solving specific computer communication engineering problems in complex solutions. <p>D. General and Transferable Skills</p>
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	<ul style="list-style-type: none"> - D1. Operate at specialized level of skills to communicate ideas to make formal presentations on special topics in the field of computer and communication engineering. - D2. Operate with significant responsibility as a member of a team on specialized topics, often involving experimentation in computer and communication engineering. - D3. Demonstrate ability to engage in scientific life-long learning to hone professional and organizational skills. - D4. Gain insight into ethical dimensions of engineering and the role of the engineer as a positive agent of societal improvement in socioeconomic contexts at the local, regional, and international level.
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* Mandatory fields

III. Judgement Summary

<h2>The Programme's Judgement: Confidence</h2>
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Standard/ Indicator	Title	Judgement
Standard 1	The Learning Programme	Satisfied
Indicator 1.1	The Academic Planning Framework	Addressed
Indicator 1.2	Graduate Attributes & Intended Learning Outcomes	Addressed
Indicator 1.3	The Curriculum Content	Addressed
Indicator 1.4	Teaching and Learning	Addressed
Indicator 1.5	Assessment Arrangements	Addressed
Standard 2	Efficiency of the Programme	Satisfied
Indicator 2.1	Admitted Students	Addressed
Indicator 2.2	Academic Staff	Addressed
Indicator 2.3	Physical and Material Resources	Addressed
Indicator 2.4	Management Information Systems	Addressed
Indicator 2.5	Student Support	Addressed
Standard 3	Effectiveness of Quality Management and Assurance	Satisfied
Indicator 3.1	Efficiency of the Assessment	Addressed
Indicator 3.2	Academic Integrity	Addressed
Indicator 3.3	Internal and External Moderation of Assessment	Addressed
Indicator 3.4	Work-based Learning	Addressed

Indicator 3.5	Capstone Project or Thesis/Dissertation Component	Partially Addressed
Indicator 3.6	Achievements of the Graduates	Partially Addressed
Standard 4	Effectiveness of Quality Management and Assurance	Satisfied
Indicator 4.1	Quality Assurance Management	Addressed
Indicator 4.2	Programme Management and Leadership	Addressed
Indicator 4.3	Annual and Periodic Review of the Programme	Addressed
Indicator 4.4	Benchmarking and Surveys	Partially Addressed
Indicator 4.5	Relevance to Labour market and Societal Needs	Addressed

IV. Standards and Indicators

Standard 1

The Learning Programme

The programme demonstrates fitness for purpose in terms of mission, relevance, curriculum, pedagogy, intended learning outcomes and assessment.

Indicator 1.1: The Academic Planning Framework

There is a clear academic planning framework for the programme, reflected in clear aims which relate to the mission and strategic goals of the institution and the college.

Judgement: Addressed

- The academic planning for the Bachelor's Degree in Computer and Communication Engineering (BSCCE) programme starts with the Department Operational Plan that is derived from the College of Engineering mission and objectives. This is supported by the Teaching and Learning Excellence Plan (TLEP) (2021-2025) which is derived from the Ahlia University's (AU) Strategic Plan (2021-2025) and is in line with the Higher Education Council (HEC) requirements. The programme was placed on the National Qualifications Framework (NQF) – Level 8 in 2018, hence it complies with the NQF qualification design requirements. Additionally, the College of Engineering has prepared an alignment document that correlates the Programme Intended Learning Outcomes (PILOs) of the BSCCE programme with international accreditation standards set by the Accreditation Board for Engineering and Technology (ABET) and Europe Engineering Accreditation. The Panel acknowledges this endeavour and suggests that the College considers pursuing accreditation for the programme from ABET and/or Europe Engineering Accreditation.
- The title of the programme is indicative of its type and content, and is accurately stated in all programme related documents such as the certificate, transcript, programme specification, as well as the institution's website.
- The BSCCE programme is guided by four aims that are clearly articulated in the Programme Specifications document. These are aligned with the mission and objectives of the College, which in turn are mapped to the overarching strategic plan of AU. The Panel notes that the programme aims are regularly revised with relevant stakeholder's including College External Advisory Board (CEAB) as well as an external evaluator who assesses the overall programme. The Panel also notes the efforts made by the College to

support students in achieving the programme aims in terms of preparing them for professional practice and success. This is through involving them in research publication in collaboration with faculty members as well as preparing them to obtain professional certificates such as (Amazon Web Services and Cisco Certified Network Associate Security) and participate in international competitions, where samples of publications and awarded certificates were provided to the Panel.

- The College has its own Risk Assessment and Management Register that includes the identification, evaluation, monitoring, reporting and treating of actions for programme related risks. Examples of the areas covered are risks related to programme delivery, programme resources and facilities, safety in the laboratories, and students' performance and progression. Such risks are discussed regularly in the College Council meetings and actions are taken accordingly to deal with them.

Indicator 1.2: Graduate Attributes & Intended Learning Outcomes

Graduate attributes are clearly stated in terms of intended learning outcomes for the programme and for each course and these are appropriate for the level of the degree and meet the NQF requirements.

Judgement: Addressed

- AU has defined 10 generic graduate attributes documented in the TLEP and mapped to the PILOs. The BSCCE programme encompasses 13 PILOs that are clearly articulated in the Programme Specification document. These PILOs are effectively formulated, measurable, aligned with the programme's aims, and are suitable for the degree's level and nature.
- Each course has its own Course Intended Learning Outcomes (CILOs) that are explicitly outlined in the Course Specifications documents. The courses and their corresponding CILOs are mapped to the PILOs through the Curriculum Skills Map. The Panel examined the provided course specifications and finds that the CILOs are generally well-suited for the respective courses in terms of their NQF level, content, and contribution to the achievement of the PILOs.

Indicator 1.3: The Curriculum Content

The curriculum is organised to provide academic progression of learning complexity guided by the NQF levels and credits, and it illustrates a balance between knowledge and skills, as well as theory and practice, and meets the norms and standards of the particular academic discipline.

Judgement: Addressed

- The BSCCE Study Plan is designed with appropriate year-on-year progression. The programme is offered with 134 credit hours that are equal to 548 NQF credits. The Plan clearly shows the course pre-requisites which the Panel agrees with their selection to ensure gaining the required basis for the subsequent courses. Additionally, the Course Directory serves as a comprehensive document that outlines the programme's progression, including essential details such as student workload and pre-requisite courses. Similarly, the Programme Factsheet offers interested prospective students a clear overview of the programme structure and general requirements. The Panel appreciates the detailed organisation of these documents, as they effectively cater to both students and the public, providing valuable information about the programme.
- The BSCCE curriculum is composed of courses that support the balance of theory and practice, and knowledge and skills. Higher-level skills, such as evaluation, analysis and critical thinking are apparent in courses which are designed to synthesise skills, knowledge and experiences. The courses content also meet the expected depth and breadth, which was clearly noticed by the Panel while reviewing the Course Portfolios including samples of students work. The Panel also acknowledges that there is a reflection of faculty expertise informing the curriculum.
- The Panel finds that the curriculum and the learning material including textbooks and references are regularly updated based on internal and external stakeholders' feedback and in line with international standards. The College of Engineering follows the Quality Assurance (QA) Manual of AU and the complementary policies and procedures for programme reviews, which ensures maintaining the BSCCE curriculum up-to-date and fit for purpose. This includes benchmarking the BSCCE programme with similar local, regional and international programmes, alignment of with professional associations such as the Europe Engineering Association; feedback from CEAB and external evaluation of the programme. This resulted in a development of an updated Study Plan (effective 2022-2023) incorporating new courses that are technical in nature to address emerging trends and requirements in the industry, such as Applied Robotics, Cyber Security, and Cloud Services Development. This proactive approach ensures that the programme remains relevant and equips students with the necessary knowledge and skills to thrive in the field.

Indicator 1.4: Teaching and Learning

The principles and methods used for teaching in the programme support the attainment of programme aims and intended learning outcomes.

Judgement: Addressed

- The TLEP emphasises the use of diverse teaching methods and strategies that enable student exposure to professional practice and promote lifelong learning. The Panel notes

that these methods and strategies are effectively applied in the BSCCE programme to facilitate student's engagement and achievement of the learning outcomes, as clearly indicated by the Programme Specification. The Course Specification documents include detailed teaching, learning and assessment methods such as group projects, class discussions, case studies, problem-solving activities, and field trips, illustrating their contribution to the achievement of the CILOs. Moreover, the College organises the Final Project Exhibition, where the students are required to present their final projects and are assessed by members from the industry. The Panel notes that the final project course demonstrate independence, research ethics, critical thinking, problem-solving and creativity, and learnt that many of the students were able to publish their research.

- The College implements co-curricular and extra-curricular activities for students to gain knowledge and skills from real-life exposure including seminars, workshops, inviting guest speakers from the industry and engaging students with professional bodies such as Bahrain Engineering Society and participation in the Huawei competition. Students also participated in the World Technologies Universities Network and won the first prize for their idea. The Panel took note of students' feedback during interviews, where they expressed satisfaction with the teaching methods employed in different courses, particularly the inclusion of more practical components, and co-curricular participation with the industry leading to obtaining professional certifications. The Panel appreciates the College's efforts and level of engagement with the industry to effectively facilitate the achievement of the learning outcomes and expose students to professional practice.
- E-learning is part of the teaching and learning strategies and supports the achievement of the BSCCE PILOs. AU utilises Moodle and the Microsoft Teams platform to support virtual learning and provides all the required learning resources on them to be available to students at all times. The Virtual Learning Academic Policy and Guidelines, which is in line with the TLEP, identifies the rules and guidelines for the utilisation of the virtual learning platforms and online assessment. This is monitored by Teaching, Learning and Assessment Committee (TLAC) in coordination with the Centre for Accreditation and Quality Assurance (CAQA) to maintain the highest academic standards and compliance with national and regulatory requirements.

Indicator 1.5: Assessment Arrangements

Suitable assessment arrangements, which include policies and procedures for assessing students' achievements, are in place and are known to all relevant stakeholders.

Judgement: Addressed

- The BSCCE programme adheres to the well-defined Assessment Manual of AU. The Manual outlines the assessment process and procedures and specifies a range of formative

and summative assessment methods that are communicated to students through the course specifications at the beginning of each semester. The Panel notes that the Assessment Manual was recently revised to adhere to the QA processes of AU in relation with the HEC regulations and NQF requirements, and is available to stakeholders on the institution's website. Students also are provided during the induction day with the Student Handbook, which covers all learning and assessment related procedures and regulations.

- The Assessment Manual mandates that instructors provide feedback to students within a few days after an assessment and before the next assessment, either through Moodle or face-to-face meetings. The Panel was provided with samples of written feedback and confirmed, during interviews, that students receive regular feedback on their submitted assignments within a week, typically during the next lecture. The Manual also outlines the guidelines to the grading criteria, and internal and external verification and moderation of assessment. The Panel examined samples of key answers, marking rubrics and internal and external verification and moderation forms which were submitted individually and as part of the Course Portfolios.
- The Panel notes that academic integrity and ethics in research are covered in the syllabi of the ethics and the research methods courses which are mandatory for all degree programmes, as stated in the Assessment Manual. The provided marking rubrics indicate that ethics are considered when evaluating students' research. The Manual outlines the policy and procedure related to plagiarism and academic misconduct, including penalties for encountered cases. Similarly, the Manual covers the procedures for students appeal against their grades, which are also included in the Student Handbook and explained during induction. The Panel was provided with samples of appeal and misconduct cases and actions taken by the Institution and confirmed during interviews that students and faculty members are familiar with the assessment and appeal procedures.

Standard 2

Efficiency of the Programme

The programme is efficient in terms of the admitted students, the use of available resources - staffing, infrastructure and student support.

Indicator 2.1: Admitted Students

There are clear admission requirements, which are appropriate for the level and type of the programme, ensuring equal opportunities for both genders, and the profile of admitted students matches the programme aims and available resources.

Judgement: Addressed

- The BSCCE programme follows AU's Admission Policy for undergraduate programmes. The Policy is well-documented and published in various media including the AU website. The Programme Factsheet and Student Handbook also include all the required admission information. Interviewed students and staff, show clear understanding of the admission requirements. The Policy stipulates that an applicant should have a Secondary School certificate (Tawjihi) or its equivalent with more than 70%. Candidates who do not meet the admission requirements may be conditionally accepted subject to passing an interview, and Mathematics and English language placement tests. During interviews, the Panel was informed that the candidates who are not meeting the admission requirements can be enrolled in the orientation programme for English language and Mathematics supported by the College of Arts and Sciences. The Panel also noted the acceptance of internally and externally transferred students to the BSCCE programme according to the Accepting Transfer Applicants from other Higher Education Institutions Policy and Procedure.
- The Admission Policy was revised in 2021 following the QA arrangements for policy reviews by AU, and the admission requirements of the College of Engineering were revised in 2019-2020 and approved by the University Council.

Indicator 2.2: Academic Staff

There are clear procedures for the recruitment, induction, appraisal, promotion, and professional development of academic staff, which ensure that staff members are fit-for-purpose and that help in staff retention.

Judgement: Addressed

- At AU, recruitment, appraisal, and promotion procedures are well-documented and known to all academic staff. The Recruitment Procedure involves multiple parties, including the Chairperson, Department Council, Dean, Appointment and Promotion Committee, and University Council for final approval. Evidence was provided to the Panel, including minutes of meeting discussing the appointment and promotion of the College of Engineering faculty following the formal procedures, as well as new members induction. According to the Self-Evaluation Report (SER), the retention rate in 2021 was high at 87.5%, and staff members confirmed during interviews that the university's environment contributes to their job satisfaction. Moreover, the Panel learnt that most staff members who leave do so for personal reasons or retirement.
- AU faculty evaluation is conducted once a year according to the well-articulated Faculty Evaluation process. The appraisal system includes several aspects such as self-evaluation, students' evaluation, Department Chairperson evaluation, quality of research, quality of teaching, any administrative tasks and community engagement. The appraisal results are utilised to create a professional development plan for each staff member, which was confirmed by interviewed faculty. The Panel was provided with the Annual Faculty Professional Development Plan – 2023, which is linked to the institution's strategic objectives and developed based on a regular training need analysis and included the list of 2023 activities. AU also supports their faculty members to pursue their post graduate studies, and the Panel noted current cases in the College of Engineering, who are satisfied with the provided support, as was confirmed during interviews.
- The five-year Research Plan of AU clearly indicate the aims and performance indicators for scientific research. The plan is implemented in line with several policies and procedures, such as postgraduate studies and research and funding policy and procedure as well as funding scheme for publishing books and journals. The Panel was provided with the Summary of Research Achievements for the years 2019 to 2022 including the list of published books and articles by the College of Engineering faculty members as well as their participation in conferences, and noted during interviews that the faculty members are aware of the university research agenda and fundings resources.
- The distribution of academic staff workload is in line with the HEC regulations and according to the AU Workload Policy. The Panel notes that the workload of the BSCCE faculty is considerably high given their duties and responsibilities including administrative responsibilities, student advising, teaching, research, community engagement and supervising capstone and internship students. This was evident in the Workload Policy, where the allocated hours for "research" is equal for all ranks, without taking into consideration the teaching load specifically for lecturers and assistant professors. The Panel is concerned that both ranks require sufficient time for research in

order to pursue promotion opportunities, as indicated in the Faculty Professional Development Plan Year 2023. Hence, the Panel suggests reconsidering the allocation of workload hours for research for different ranks. This adjustment will provide lecturers and assistant professors with the necessary time and support to engage in meaningful research activities, which are essential for their professional growth and advancement.

Indicator 2.3: Physical and Material Resources

Physical and material resources are adequate in number, space, style and equipment; these include classrooms, teaching halls, laboratories and other study spaces; Information Technology facilities, library and learning resources.

Judgement: Addressed

- According to the SER, AU has 24 classrooms and 12 computer laboratories that are equipped with the latest hardware and software to support the delivery of their programmes, in addition to free Wi-Fi. Moreover, there are three engineering laboratories equipped with specific engineering software and practical kits to serve the BSCCE programme, which was confirmed by the Panel during the on-site campus tour.
- AU has a library that includes printed learning resources and provides access to electronic resources, in addition to individual and group study areas. The Library and Information Resources Directorate oversees the library facilities and maintains the international online databases subscriptions, which are available 24/7 to faculty and students. Moreover, there is an internal system in the library that controls the usage of the library resources and allows students to book appointments for their visits to the library. Based on evidence and the on-site campus tour, the Panel confirmed that the available hard copy books in the library dedicated for the BSCCE programme courses include recent versions that are appropriate for the level and content of the programme.
- The Information and Communication Technology (ICT) Centre performs regular facilities maintenance checks to ensure that classrooms, learning facilities such as laboratories and studios, library and offices are maintained. The Panel reviewed evidence which ensures the availability of adequate learning resources and ICT facilities to support the students' needs. However, during the on-site campus tour, the Panel noted that some computer software/operating systems were not up-to-date, and thus, recommends that the College should ensure that the latest versions of the computer software/operating systems are installed.
- A Health and Safety Booklet and Emergency Response Guide, highlighting the emergency team contact numbers, are available online on AU website. AU also has a dedicated health clinic, which is staffed with a full-time nurse. Moreover, first aid kits are positioned across

the campus for easy access and use. During the on-site campus tour, the Panel verified the health and safety arrangements and found them adequate.

Indicator 2.4: Management Information Systems

There are functioning management information and tracking systems that support the decision-making processes and evaluate the utilisation of laboratories, e-learning and e-resources, along with policies and procedures that ensure security of learners' records and accuracy of results.

Judgement: Addressed

- AU is using the Admission and Registration Information System (ADREG) to manage and monitor admission, student courses registration, student performance, academic advising, alumni tracking, among other processes and services. ADREG generates reports for classroom and computer laboratories usage by students and faculty, as well as other activities. The Panel was provided with minutes of meetings showcasing the discussion by the College Council with regards to the generated reports for decision-making.
- Moodle is the learning management system which is used by the students to view the course material and upload their assignments. Moreover, AU has recently released a mobile application that provides students with an easier access to their profile, schedule, transcript, study plan, examination cards, among other services.
- To ensure the security of the learners' records, the ICT Centre has the Server Backup & Restore Procedure, which indicates that server backup is automatically scheduled on a daily, weekly, and monthly basis and the backup tapes are stored at Ahlia School, which is off site from AU.
- AU implements its Authentication of Certification Policy and Procedure to verify students' achievement and authenticate certificates. According to the procedure, the certificate issuance is initiated through ADREG, which verifies the course completion versus the degree requirements and then the certificate is sent for several approval stages. A unique 29-digit security key is generated by ADREG for each certificate which protects it from fraud. The authentication process also includes endorsement by the HEC. The Panel was provided with samples of issued certificates and relevant forms.

Indicator 2.5: Student Support

There is appropriate student support available in terms of guidance, and care for students including students with special needs, newly admitted and transferred students, and students at risk of academic failure.

Judgement: Addressed

- On admission, the Deanship of Student Affairs holds an orientation day every semester to introduce newly admitted students to the university's services and resources such as library, laboratories, advising and career counselling services, all of which are explained in the Student Handbook. Counselling Brochures are distributed around the campus advertising the services offered to students. Moreover, the Directorate of Professional Relations supports students during their internship placements and provides career guidance, and the Panel was provided with examples of support cases requested by the Engineering students. Furthermore, the Panel noted that there is a dedicated WhatsApp number available for all students as an easy mean of supporting students with any enquires or issues.
- During the induction process, students are introduced to their academic advisor, who is appointed by the Department Chairperson. Each student needs to meet their academic advisor at least once every academic semester to review and discuss their academic progress, as documented in the Academic Advising Policy and Procedure. ADREG allows the advisor to monitor the students' course registration, their performance along with viewing their transcripts. The system is also used for monitoring and dealing with at-risk students by tracking their academic progress and generating reports for instructors to take suitable actions. Samples of academic advising reports and dealing with at risk students were provided to the Panel.
- AU also admits students with special needs and has in place facilities and arrangements to support them during their study. The Student Handbook includes all the facilities and services provided to special needs students. The Panel was provided with the Special Needs Admission Committee Interview Report which indicates the discussion of the case and agreement on the required care and support. During the on-site campus tour, the Panel noticed that the facilities provided for students with special needs as well as the counselling services to support them are adequate.
- AU ensures the evaluation of the facilities and support services provided to the students by conducting satisfaction surveys. The results revealed that the students were very satisfied with laboratory facilities, learning resources and provided support. Moreover, during the interviews, students confirmed their satisfaction with the provided services and the level of support and cooperation by their instructors.

Standard 3

Academic Standards of Students and Graduates

The students and graduates of the programme meet academic standards that are compatible with equivalent programmes in Bahrain, regionally and internationally.

Indicator 3.1: Efficiency of the Assessment

The assessment is effective and aligned with learning outcomes, to ensure attainment of the graduate attributes and academic standards of the programme.

Judgement: Addressed

- AU's Assessment Manual identifies various formative and summative assessment methods, which are effectively applied in the BSCCE programme, such as quizzes, examinations, research and practical projects, and oral presentations, as stated in the Programme and Course Specifications. The Panel examined different samples of assessments submitted as part of the Course Portfolios, and finds that they are valid, reliable, and appropriate in terms of complexity and support the achievement of academic standards.
- All BSCCE Course Specifications include a section dedicated for aligning the assessment methods to the CILOs. A CILOs Attainment Sheet is prepared at the end of the semester for each course to assess the achievement of the CILOs, which in turn contribute to the achievement of the PILOs and graduate attributes. Any cases of CILOs not achieving the identified 60% threshold, are discussed in the Department of Computer Engineering Council to take necessary actions.
- Monitoring the implementation of the assessment processes is done by the College Council and TLAC in coordination with CAQA, to ensure this is done systematically and consistently. The Panel was provided with samples of minutes of meetings indicating assessment process monitoring and improvements.

Indicator 3.2: Academic Integrity

Academic integrity is ensured through the consistent implementation of relevant policies and procedures that deter plagiarism and other forms of academic misconduct (e.g. cheating, forging of results, and commissioning others to do the work).

Judgement: Addressed

- The Assessment Manual clearly explains academic integrity, and the Panel confirmed during interviews that necessary related information is known by staff and students. During induction, students are made aware of general academic integrity rules, regulations and types of violations, which are also documented in the Student Handbook. The Guidelines for the Undergraduate Project document further cover academic integrity related to research and ethics which should be known by students, supervisors and examiners.
- The College of Engineering consistently utilises the Turnitin software for detecting plagiarism following the Assessment Manual of AU. Students are required to submit their assignments and project reports through Moodle, which allow for a Turnitin check. Samples of students' reports checked against the identified similarity percentage of 30% as well as evidence of implementation through Moodle were examined by the Panel. For detected misconduct cases, a disciplinary process is followed through an independent committee consisting of members from the Department and Deanship of Student Affairs. The Panel was provided with a sample case along with the Disciplinary Committee Report demonstrating the investigation and actions taken. The Panel acknowledges that the programme has a robust and well-defined process for detecting and dealing with academic misconduct, nevertheless, the Panel advises lowering the 30% similarity percentage.

Indicator 3.3: Internal and External Moderation of Assessment

There are mechanisms in place to measure the effectiveness of the programme's internal and external moderation systems for setting assessment instruments and grading students' achievements.

Judgement: Addressed

- The mechanism for assessment moderation is well defined in the Assessment Manual. The internal moderation of assessment comprises pre-assessment (verification) to ensure the validity and appropriateness of the assessment and post-assessment (moderation) procedures to ensure fairness of grading according to the relevant rubrics. Internal verification and moderation apply to all assessments weighted more than 20%. The Manual also covers the selection of internal verifiers who are selected at the beginning of each semester by the Department Chairperson based on their specialisation. Samples of internal verification and moderation forms for the BSCCE programme assessment were submitted and examined by the Panel, who noted that moderation is based on a selection of three samples of students work (low, average, and high). While checking three scripts per course for internal moderation is adequate for courses with low number of students, the Panel suggests that the Department consider moderating a percentage of the students work dependent on the cohort size.

- Likewise, the external moderation process is described in the Assessment Manual, as well as through the process for appointing external assessors who are selected based on their qualification, experience and professional competencies. The external moderation process is vigorous with external moderators being given the appropriate information to carry out their responsibilities effectively, which was confirmed during the interviews. The Panel was provided with different samples of the external verification and moderation forms of all assessments, which confirms that the BSCCE programme follows the AU procedure.
- Monitoring the effectiveness of the BSCCE programme's internal and external moderation processes is done as per the Assessment Manual and the Mechanism to Evaluate the Effectiveness of External Moderation of Assessment/Evaluation documents of AU. The College Council discusses any arising issues and decides on the required improvement actions and forwards them to the TLAC and CAQA for approving and monitoring their implementation.

Indicator 3.4: Work-based Learning

Where assessed work-based learning takes place, there is a policy and procedures to manage the process and its assessment, to assure that the learning experience is appropriate in terms of content and level for meeting the intended learning outcomes.

Judgement: Addressed

- The BSCCE programme includes a three-credit mandatory 'Internship' (INTR461) course that provides work-based learning opportunities, and that is managed by the BSCCE programme team in cooperation with the Internship Office at AU. The Undergraduate Internship Programme Guidelines document ensures systematic implementation by all parties involved. The Internship Office assists students in selecting appropriate companies from a list of associated organisations. The academic supervisors regularly visit the students and their site supervisors to ensure that the assigned tasks are appropriate for a bachelor's degree level internship. Students submit bi-monthly reports to both their academic and site supervisors. Upon completion of the internship, each student submits a final report and a presentation which are graded by both the academic and site supervisors to determine the student's overall performance. Samples of the internship reports and evaluation forms were examined by the Panel which confirms consistent implementation by the College of Engineering.
- To evaluate the effectiveness of the internship process, feedback is collected through a survey filled by site supervisors, where the results are discussed in the Department Council meetings. The survey conducted in December 2022 scored 86.36% satisfaction level by the internship site supervisors who also expressed high satisfaction with the students' performance during the interviews. Interviewed alumni also emphasised the

significant learning opportunities during the internship, with some having declared that they are currently working in the same organisation where they completed their internship.

Indicator 3.5: Capstone Project or Thesis/Dissertation Component

Where there is a capstone project or thesis/dissertation component, there are clear policies and procedures for supervision and evaluation which state the responsibilities and duties of both the supervisor and students, and there is a mechanism to monitor the related implementations and improvements.

Judgement: *Partially Addressed*

- BSCCE students must complete the 'Major Project' (ECCE499), which is governed by the Guidelines for the Undergraduate Project document, which is posted on the institution's website. These guidelines cover the project's processes, roles and responsibilities of all parties involved (i.e., students, supervisors, and internal examiners), examination and deadline requirements. Prior to registering for the Major Project course, students must complete two courses, namely the 'Research Methods in IT and Engineering' (IERM498) and the 'Ethics and Professional Practice in IT and Engineering' (ETHC 392), as stated in the Programme Specification.
- The evaluation of students' projects involves multiple parties including the project supervisor and two internal examiners who form an Examination Committee. The Panel reviewed the marking rubric for the written report and oral presentation as well as samples of evaluation forms for a major project. However, during the interviews with the department team, it was not clear to the Panel how the Department addresses any disparities that may arise from multiple evaluators. Therefore, to ensure consistency and fairness in grading, as well as a more equitable assessment of students' work, the Panel recommends that the College should revise the major project evaluation process by considering a percentage, such as 20%, to trigger the arbitration process for the final grade.
- The assigned project supervisor uses ADREG to record student meetings and track progress, and the Department Chairperson also monitors the supervision process using ADREG. While the responsibility of monitoring the process of implementing the major project process in adherence with the guidelines is monitored by the Department Council. TLAC is responsible for revising the guidelines and implement improvements in coordination with CAQA.

Indicator 3.6: Achievements of the Graduates

The achievements of the graduates are consonant with those achieved on equivalent programmes as expressed in their assessed work, rates of progression and first destinations.

Judgement: *Partially Addressed*

- The Panel examined the Programme Specification, and Course portfolios, which include students graded work and was able to confirm the appropriateness of the level of student's achievements as well as comparability with similar programmes. This was also reflected during the interviews with the faculty, students, alumni, employers, and members of the CEAB. The Panel also notes that many students have published papers in refereed journals and obtained professional certificates based on the content they studied in some of the courses.
- The Panel notes good retention rates for the programme over the last five years, ranging from 83% to 96%, with the most recent data showing 96% retention. The Graduate Destination list for the last four years shows that 54.4% of the BSCCE graduates gained employment in relevant fields. However, the Panel noted from the list that 31% of graduates are listed as looking for work. Some of the interviewed students stated that computer engineering employment opportunities are limited in Bahrain, and that the ICT skills which are more software-centric and less hardware design oriented, are more in demand. Nevertheless, the Panel recommends that the College should investigate this issue and take the necessary improvement actions in the programme to ensure increased employment opportunities.
- The employer and alumni satisfaction surveys indicated high satisfaction with the programme, although during interviews, the employers commented on the increasing need for the programme to further develop soft skills such as communication and collaboration. Likewise, the CEAB survey indicates high satisfaction with the programme and its graduates. However, given the universal high scoring and limited discrimination between criteria in the surveys, the Panel recommends that the College should revise the employer, CEAB, and other survey instruments to include qualitative data to help faculty understand the reasons for scores and capture suggestions for improvement.

Standard 4

Effectiveness of Quality Management and Assurance

The arrangements in place for managing the programme, including quality assurance and continuous improvement, contribute to giving confidence in the programme.

Indicator 4.1: Quality Assurance Management

There is a clear quality assurance management system, in relation to the programme that ensures the institution's policies, procedures and regulations are applied effectively and consistently.

Judgement: Addressed

- The Institution's QA process is well established and documented in the QA Manual which includes the QA framework. The framework involves all relevant entities in the Institution, their relationships and distinctive roles, such as the University Council, College Council, Department Council, the Accreditation and Quality Assurance Committee (AQAC), CAQA, TLAC, among others. The QA Manual is supported by other institutional policies and procedures to ensure a systematic and consistent implementation of QA processes across the Institution, its colleges and departments. All institutional policies and procedures are communicated to relevant stakeholders through the AU website or the documentation portal (SharePoint). Moreover, AU conducts regular QA workshops for their academic and administrative staff to ensure they properly understand their roles in the various QA processes. Nevertheless, and based on the interviews, the Panel suggests to further strengthen the QA processes by increasing the awareness of other academic and administrative staff who are not directly involved in the specific QA meetings.
- The College of Engineering consistently implements the various QA processes in line with the relevant policies and procedures, and the Panel was provided with minutes of meetings for the Department Council, TLAC, and AQAC discussing the BSCCE programme quality matters.
- There is timely and regular revision of the QA Manual and the institutional policies and procedures, and CAQA is responsible for version control of documents. CAQA in coordination with AQAC provide thorough quality control of the reports generated by the AU colleges through a review process. Monitoring and improvement of the QA system by CAQA is strengthened through a semester-based faculty satisfaction survey, who showed high satisfaction for all criteria.

Indicator 4.2: Programme Management and Leadership

The programme is managed in a way that demonstrates effective and responsible leadership and there are clear lines of accountability.

Judgement: Addressed

- The College of Engineering Organisation Chart is headed by the Dean with chairpersons of both departments in computer engineering and telecommunications engineering directly reporting to him. The University Bylaws document clearly outlines the leadership roles and terms of reference for management positions and committees in the Institution, in addition to the detailed Job Descriptions documents for the Dean and the Department Chairperson. The Panel acknowledges that programme management and leadership is clear with roles and responsibilities fully defined.
- There are several committees evidencing custodianship at different levels at the Institution. The provided evidence show clear traceability of BSCCE programme changes and approvals through various entities. Examples include discussion for improving the BSCCE study plan in the Department Council, revision and recommendation by the College Council, and finally the approvals by the Curriculum Committee followed by the University Council.

Indicator 4.3: Annual and Periodic Review of the Programme

There are arrangements for annual internal evaluation and periodic reviews of the programme that incorporate both internal and external feedback and mechanisms are in place to implement recommendations for improvement.

Judgement: Addressed

- The BSCCE programme reviews are multi-faceted and sufficiently detailed to ensure that the programme is of high quality, in accordance with the institution's Revised Policies on the Development of New, Review and Closure of Existing Academic Programmes, Academic Programme Annual Review Procedure, and the Process for Developing, Reviewing and Closing Undergraduate Programmes documents. At the end of each semester, the Department Chairperson prepares the End of Semester Report, in coordination with the Department Council. The report is then revised and analysed by CAQA considering several factors, such as student achievement, course content and assessment, external assessor feedback, admissions, and learning resources. This report is subsequently discussed in the meetings of TLAC and the College Council for decision making and implementation of the necessary actions is taken in the following semester,

an example of which is updating the textbooks for some courses to maintain content relevancy to recent developments in the field.

- The BSCCE programme is annually reviewed. The provided Academic Programme Annual Review Report for the year 2021-2022 showcases the review of the programme in terms of the appropriateness and achievement of the CILOs and PILOs, course contents and assessment, internal and external stakeholders' feedback, and alignment with professional certificates requirements. In case of any major changes required in the learning outcomes or programme structure, these are kept for the next periodic review.
- The programme is also comprehensively reviewed every three years at a greater level of detail. This is taking into consideration a detailed and informative benchmarking, market needs analysis, feedback from external stakeholders including CEAB, alumni and employers, and the external evaluation of the programme. This resulted in a comprehensive action improvement plan revised and monitored by CAQA, including programme structure changes in terms of adding new courses covering emergent topics, such as Cybersecurity, Robotics, and Cloud Computing, as evident in the new study plan. This action plan has clear roles and responsibilities and monitored by CAQA to ensure implementation in accordance with the institution's QA policies and procedures.

Indicator 4.4: Benchmarking and Surveys

Benchmarking studies and the structured comments collected from stakeholders' surveys are analysed and the outcomes are used to inform decisions on programmes and are made available to the stakeholders.

Judgement: Partially Addressed

- The College of Engineering has conducted a comprehensive benchmarking exercise for the BSCCE programme in 2021-2022 as part of the three-year periodic programme review requirement and in line with the Benchmarking Policy of AU. The BSCCE Benchmarking Study compares the programme against a number of local, regional, and international universities. The Panel notes that the process is rigorous and resulted in numerous findings for changes to the programme content and structure. This is evident in the minutes of meetings of the Curriculum Committee where the BSCCE new study plan was approved. However, the Panel notes that the benchmarking was done using public/online available data, although the Benchmarking Policy explicitly states that formal agreements for benchmarking should be established. Therefore, the Panel recommends that the College should establish a formal benchmarking process to comply with the institution's benchmarking policy.

- AU gathers feedback from internal and external stakeholders through its Centre for Measurement and Evaluation (CME), which is responsible for conducting surveys, mainly for the students, alumni, employers and CEAB. The CME analyses the results of the surveys in a form of a report forwarded to the Department and College Councils for decision making. The Panel was provided with samples of minutes of the Department and College Councils' meetings discussing the external stakeholders feedback and the actionable items. Nevertheless, as previously noted in Indicator 3.6, survey instruments need to be revised and improved.
- With regards to implementing the actionable items based on the external stakeholders' feedback, the Panel noted during the interviews that only the CEAB members are aware of the implementation progress, but there was insufficient evidence that students, alumni and employers receive feedback on actions taken following their feedback. Therefore, the Panel recommends that the College should develop and implement a formal mechanism to ensure that improvements made to the programme are communicated to all stakeholders.

Indicator 4.5: Relevance to Labour market and Societal Needs

The programme has a functioning advisory board and there is continuous scoping of the labour market and the national and societal needs, where appropriate for the programme type, to ensure the relevancy and currency of the programme.

Judgement: Addressed

- To ensure continuous scoping of the labour market needs and the currency of the programme, the College of Engineering has an active CEAB, with experts from the industry and the college's alumni. CEAB terms of reference are clearly documented and the Panel learnt during interviews with the members that they are fully aware of their roles and responsibilities. The Panel was also provided with evidence of documenting CEAB's feedback for BSCCE programme improvement which is considered in the recent periodic programme review action improvement plan and implemented in the new study plan.
- Market needs analysis is part of the periodic programme review process. The College of Engineering conducted a market needs analysis for the BSCCE programme in 2020. The analysis report captures the growth trends in the telecommunications industry, resulting in the increasing need for ICT skills and engineers, which drive the need for the BSCCE programme. Moreover, the Panel notes that some of the programme courses are robustly compared with equivalent strong industrial professional certifications from Huawei, IBM and others to estimate the content overlap, and eases the transition of graduates to industry roles requiring professionally certified skills. The Panel appreciates that the

BSCCE programme ensures good alignment with market trends and professional certification.

V. Conclusion

Taking into account the institution's own self-evaluation report, the evidence gathered from the interviews and documentation made available during the virtual site visit, the Panel draws the following conclusion in accordance with the DHR/BQA *Academic Programme Reviews (Cycle 2) Handbook, 2020*:

There is Confidence in the Bachelor's Degree in Computer and Communication Engineering of College of Engineering offered by the Ahlia University.

In coming to its conclusion regarding the four Standards, the Panel notes, with appreciation, the following:

1. The detailed organisation of the programme related documents, as they effectively cater to both students and the public, providing valuable information about the programme.
2. The College's efforts and level of engagement with the industry to effectively facilitate the achievement of the learning outcomes and expose students to professional practice.
3. The BSCCE programme ensures good alignment with market trends and professional certification.

In terms of improvement, the Panel recommends that the Ahlia University should:

1. Ensure that the latest versions of the computer software/operating systems are installed.
2. Revise the major project evaluation process by considering a percentage, such as 20%, to trigger the arbitration process for the final grade.
3. Investigate the high percentage of unemployed graduates and take the necessary improvement actions in the programme to ensure increased employment opportunities.
4. Revise the employer, College External Advisory Board, and other survey instruments to include qualitative data.
5. Establish a formal benchmarking process to comply with the institution's benchmarking policy.
6. Develop and implement a formal mechanism to ensure that improvements made to the programme are communicated to all stakeholders.