



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

Directorate of Higher Education Reviews Programme Review Report

**University of Bahrain
College of Engineering
Bachelor of Science in Electrical Engineering
Kingdom of Bahrain**

Site Visit Date: 15-17 May 2023

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Acronyms

ABET	Accreditation Board for Engineering and Technology
APR	Academic Programme Review
B.Sc.	Bachelor of Science
BQA	Education & Training Quality Authority
CILO	Course Intended Learning Outcome
CoE	College of Engineering
DHR	Directorate of Higher Education Reviews
EEED	Electrical and Electronics Engineering Department
HEC	Higher Education Council
HEI	Higher Education Institution
HoD	Head of Department
IEEE	Institute of Electrical and Electronics Engineers
IET	Institution of Engineering and Technology
IT	Information Technology
NQF	National Qualifications Framework
PAC	Programme Advisory Committee
PEO	Programme Educational Objective
PILO	Programme Intended Learning Outcome
QA	Quality Assurance
QAAC	Quality Assurance and Accreditation Center
QAAEC	Quality Assurance & Accreditation Executive Committee
QAC	Quality Assurance Committee
QAO	Quality Assurance Office
SAC	Student Advisory Committee
SER	Self-Evaluation Report
SIS	Student Information System
SO	Student Outcome

T&L	Teaching and Learning
UAT	University Aptitude Test
UILO	University Intended Learning Outcome
UoB	University of Bahrain
UTEL	Unit for Teaching Excellence and Learning
WBL	Work-Based Learning

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 form 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 the 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*	University of Bahrain
College/ Department*	College of Engineering/Department of Electrical and Electronics Engineering
Programme/ Qualification Title*	Bachelor of Science in Electrical Engineering
Qualification Approval Number	University Council Decision No. (374/2022) of 2022
NQF Level	8
Validity Period on NQF	5 years from the placement date
Number of Units*	46
NQF Credit	577
Programme Aims*	<ol style="list-style-type: none"> 1. Successfully engage in careers in a broad range of electrical engineering areas to serve the needs of both private and public sectors. 2. Engage in continuous professional development activities, seek learning opportunities including graduate studies, and adapt to changes in work environment. Advance in leadership and responsibility and contribute to the well-being of the society and environment through responsible practice of engineering profession.
Programme Intended Learning Outcomes*	<ol style="list-style-type: none"> 1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. 2. Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. 3. Communicate effectively with a range of audiences. 4. Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

	<ol style="list-style-type: none">5. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.7. Acquire and apply new knowledge as needed, using appropriate learning strategies.
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* Mandatory fields

III. Judgement Summary

The Programme's Judgement: Confidence

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	Partially Addressed
Indicator 1.3	The Curriculum Content	Partially 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	Partially Addressed
Indicator 2.3	Physical and Material Resources	Partially 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	Partially Addressed
Indicator 3.4	Work-based Learning	Addressed
Indicator 3.5	Capstone Project or Thesis/Dissertation Component	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	Partially 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 University of Bahrain (UoB) has a clear planning and assessment framework reflected in the Academic and Administrative Bylaws, Regulations for Offering and Developing Academic Programmes and Courses, and the Quality Manual. The Electrical and Electronics Engineering Department (EEED), which includes the Bachelor of Science (B.Sc.) in Electrical Engineering programme, abides by this framework. An Assuring Learning guide is available to assist in developing and reviewing course syllabi in terms of course descriptions, learning outcomes, and assessment methods, as well as to verify the National Qualifications Framework (NQF) level, which in the case of the Electrical Engineering programme is NQF Level 8.
- The B.Sc. in Electrical Engineering programme was accredited by the Accreditation Board for Engineering and Technology (ABET) in 2010, 2015 and 2021. Evidence of stakeholders' involvement in reviewing the programme was provided in the form of an industry survey, which was presented as part of the 'Offering/Developing an Academic Programme Form' and in minutes of meetings of the Programme Advisory Committee (PAC) for the academic years 2020-2021 and 2021-2022. Additionally, the programme was revised in the recent past based on market and benchmarking studies, and through the 2019-2020 NQF revision, some course levels were modified to match the required NQF scoring system.
- A University Risk Management Manual prepared by the Quality Assurance and Accreditation Centre (QAAC) provides a detailed risk management approach, which identifies, assesses, mitigates, and monitors potential risks, particularly those associated with the programme's quality, its delivery, and academic requirements. Identified risks are mitigated and a risk register is monitored and updated annually by the Head of Department (HoD) through the operational plan, as was reported in interviews.

- The Programme Specification identifies the programme title as 'Bachelor of Science in Electrical Engineering', offered by the EEED of the College of Engineering (CoE). The title is concise and indicative of the qualification's type and content and is accurately documented in the certificates, programme description documents and the university's website. The mission of the programme and its three Programme Educational Objectives (PEOs) or aims are mapped to the mission of the EEED, which itself is aligned with the educational components of the college and university missions and strategic goals, all of which place emphasis on education, research, and community Partnership. The PEOs/aims also address ABET accreditation requirements and the programme's constituents' needs, as documented in the ABET Self-Study Reports of the years 2014 and 2020. The dissemination of the aims to relevant stakeholders takes place through the university website, while their review is conducted by the EEED faculty, the PAC, and the Student Advisory Committee (SAC).

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: *Partially Addressed*

- UoB has University Intended Learning Outcomes (UILOs) which all graduating students must achieve based on a University-Wide Outcome-Based Assessment Process developed by the QAAC. These UILOs are reflected in the seven Intended Learning Outcomes (ILOs) of the programme. The Programme Specification provides a clear tool and platform for mapping these Programme Intended Learning Outcomes (PILOs) to outcome domains, as well as to the PEOs and the UILOs.
- The current PILOs, which are an adoption of the new ABET PILOs/Student Outcomes (SOs) (1-7), were approved by the EEED and put into effect in the first semester of the academic year 2019-2020. Interviews with the senior management confirmed that these PILOs are continuously reviewed by the Quality Assurance Committee (QAC) and are benchmarked against the Institute of Electrical and Electronics Engineers (IEEE) and the Institution of Engineering and Technology (IET) standards. They are clearly stated, measurable, meet the NQF level descriptors' expectations, and are appropriate for the programme's type and level, and are published on the university website and in the Programme Specification.
- In terms of Course Intended Learning Outcomes (CILOs), the Panel found in place an Outcomes-Based Assessment Process developed by the QAAC, which presents a comprehensive roadmap to guide UoB faculty on outcomes-based assessment and the development of CILOs, and provides information on the appropriate mapping of CILOs to PILOs and UILOs. The Panel also reviewed samples of NQF CILOs mapping

scorecards, which helped affirm to the Panel the CILOs' appropriateness for the level and contents of the courses.

- Upon closer examination of a sample of course syllabi/specifications submitted as evidence, however, the Panel noted that in the three courses 'Power Systems' (EENG 417), 'Communications System II' (EENG 373), and 'Electrical Machines 1' (EENG 341), the process of mapping CILOs to PILOs is in need of revision; as, three of the 7 ABET-PILOs (i.e., PILOs 3, 4, and 5) were not mapped/measured in any way in all three courses. These PILOs are generic in nature and are associated with effective communication, ethical and professional responsibilities in engineering situations, and the ability to function effectively on a team. Further inspection of the Programme Specification revealed that (14) out of the (24) required courses and (4) out of the (13) elective courses did not map any of their CILOs to these PILOs and, thus, did not measure them, which the Panel does not find acceptable in a programme of this nature and level. Therefore, the Panel recommends that the College should review the CILOs to PILOs mapping of the Electrical Engineering programme, to ensure a well-balanced coverage of PILOs and their measurement through the programme's courses.

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: *Partially Addressed*

- The B.Sc. in Electrical Engineering programme consists of 136 credits in total and has a study plan organized in eight semesters, where students can complete all its requirements in four years with an average load of 18 credit hours per semester. The study plan contains a clearly organized list of courses with appropriate prerequisites corresponding to each progressive semester.
- Mapping the programme in terms of NQF levels and credits is performed using a mapping scorecard for individual courses, which helps ensure that the contents of the courses are appropriate in terms of depth and breadth. The programme went through several reviews mostly in preparation for an accreditation review by ABET that took place for the first time in October 2008, followed with a second revision that was performed in 2014 for the second cycle of ABET accreditation. A third revision was conducted through the 2019-2020 NQF assessment cycle where some course levels were modified to match the required NQF scoring system. The third ABET accreditation cycle took place in 2020, and the SER report stated that 'no significant changes were made aside from a clearer reflection of the design constraints and standards in the students' work'; however, a recommendation from ABET about the 'Senior Design Project I' (EENG 495) course did also result in a new

course description that emphasizes the application of an integrated system design approach.

- Additional revisions of certain components of the curriculum were also conducted by the EEED, as indicated in the 2021-2022 College Operational Plan. The 2022 curriculum that resulted from the 2014 review of the programme was approved by the University Council in August 2022 and reflects a stronger focus on equipping students with a strong foundation in electrical power systems, industrial power electronics, electrical transmission and distribution, rotating machinery operation, control systems applications, alternative energy sources, and other electrical power-related topics. The University Council approval document provided evidence on an elaborate benchmarking exercise made with six other similar programmes at regional and international universities. During interviews, the Panel was informed that the 2022 curriculum's study plan is considered a major change in terms of new courses offered during the third and fourth years of study, with the CILOs of remaining courses largely remaining the same. Also, the Panel noticed that the number of practical course hours doubled in the 2022 curriculum in comparison to that of 2014, to become two hours per week instead of one hour for all major required and elective courses.
- The Panel reviewed a sample of course portfolios that include various information in terms of textbook editions and practical laboratory sessions. The Panel also examined a sample of scorecards and course syllabi and noticed that in any 16-week semester, students get to perform only four to six experiments in most core courses associated with hardware-based laboratories, as stated, where the students are supposed to assemble hardware components to enable them to build applications. The Panel also found that some associated textbooks and references are not current. For example, the 'Power Electronics' (EENG333) course file/ portfolio shows that only five experiments are performed throughout the semester, and that its associated textbook is a 2004 edition. Another example is the 'Electrical Machines II' (EENG342) course with only four experiments performed in total, and its associated textbook is a 1991 edition. The Panel also found that the 2022 programme's course syllabi/specifications details are not updated to reflect new changes in laboratory sessions. For example, the 'Power Electronics I' (EENG333) syllabus still carries the same old 3-1-3 credit hours information rather than the 3-2-3 stated in the University Council Approval of the Modified Programme. The Panel recommends that the College should take necessary steps to regularly review course portfolios, monitor delivery tools, and systematically ensure that textbooks and references reflect recent changes in knowledge, coupled with applied case studies and professional practice, in course materials.

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 University has a policy which articulates its Teaching and Learning (T&L) philosophy and describes its approach to achieving effective teaching in the academic programmes offered by the different colleges, among them the CoE. This policy was approved by the University Council in December 2018 and includes T&L guidelines that the CoE abides by, which emphasize mapping T&L to PILOs and PEOs, student-centered approaches, practical and laboratory classes, the incorporation of research and scholarship activities, and a blended learning approach that includes class-based as well as e-learning modalities.
- The course syllabi demonstrate a variety of T&L methods, which in general support exposure to professional practice, applications of theory including practical and laboratory learning, workplace learning, field visits, the utilisation of periodicals, and the employment of simulation software (e.g., MATLAB, PSPICE and Multisim). Also, the SER highlighted various student-centred teaching methods and activities that support students' participation in learning, such as interactive teaching, problem-solving, case-based learning, group-work learning, and pair-programming learning.
- Since the COVID-19 pandemic, there has been a greater reliance on online T&L, primarily through the use of platforms such as MS-Teams and Blackboard. The Panel reviewed evidence in the form of pre-recorded lectures, online tutorials, laboratory sessions, and webinars and found them fit for purpose. Minutes of the Department Council in April 2020 discussed several online services related to course assessment, student advising, course pre-moderations, which show a proactive approach to e-learning on the part of the College.
- Although the T&L policy emphasises practical activities and work, the Panel noticed that in the last three years (2020-2023), limited field and study trips were organized through the programme's courses, thus limiting opportunities for practical learning. This is despite the fact that the programme has identified in its Risk Register as a 'moderate risk' that most courses do not involve enough practical activities such as field/site visits, guest speakers, or workshops/webinars, which is supposed to be mitigated through encouraging faculty to incorporate site visits in their courses. Nevertheless, only 20% achievement progress was registered in this area throughout September 2020 –September 2023. The Panel advises, therefore, that the programme ensures greater incorporation of opportunities that promote students' exposure to professional practice, such as field trips and professional guest speakers.
- The programme aligns its T&L with the UILO that emphasises 'striving for excellence in life-long learning by planning for the future, participating in continuing education or professional development activities and seeking formal and informal opportunities to enrich their lives'. This alignment is clear through four main courses, which are: 'Professional Engineering Practice' (EENG409), 'Industrial Training' (EENG395), 'Senior

Design Project I' (EENG495), and 'Senior Design Project II' (EENG496). The Panel acknowledges that these courses, besides encouraging interdisciplinary projects, research papers, and professional and societal activities, all promote independent and lifelong learning; which, as the Panel suggests, can also be augmented if the programme begins providing open laboratories to enhance students' hands-on skills and formally introduces opportunities for the development of students' entrepreneurial skills and attitudes. Nevertheless, the Panel appreciates the department's efforts in enhancing students research capabilities by introducing research topics within the courses, requiring the writing of an academic research paper, and/or the investigation of research topics as small projects.

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 Regulations of Study and Examinations document at UoB serves as a guiding assessment framework for all colleges and programmes. As reported in interviews and stated in the SER, faculty members in the EEED abide by the policies and guidelines included in this document, which the Panel examined a copy of. As per these guidelines, grades are allocated to a variety of assessments within each course, mainly a mid-term examination, a final examination, and other assessment activities, such as assignments, projects, and other methods of evaluating learning within the general rules established by the Department Council.
- The Regulations of Study and Examinations document is published on the university website for access by all relevant stakeholders. It covers guidelines for both formative and summative assessments, and the SER confirms that both types of assessment methods are used in the programme's courses. Formative assessment is mostly combined with summative assessment by providing students scheduled and incremental feedback during different phases of course projects, writing feedback in test answer sheets, distributing or publishing tests and quizzes key solutions, and giving common or specific verbal feedback during laboratory sessions to the students. Throughout the interviews, the Panel heard consistent statements on both formative and summative assessment methodologies being used, including tests, laboratory reports, assignments and course projects. Students also reported that the feedback that they receive in their courses is both timely and constructive and, thus, assists them in setting learning goals and improving their performance.
- Research-based courses in the programme include 'Professional Engineering Practice' (EENG409), 'Senior Design Project I' (EENG495), and 'Senior Design Project II' (EENG496). Close examination of these courses' syllabi in terms of assessments, course weekly breakdown/schedule, and information regarding ethical issues in assessment of

scientific research work revealed to the Panel some inconsistencies. As, some course syllabi provide a detailed outline covering all aspects including those related to academic honesty and plagiarism, while others do not. The Panel advises that the programme ensures consistency of the syllabi contents across all courses. Nevertheless, it was clear to the Panel from the course syllabi and the interviews that scientific research principles and ethics are taken into consideration whenever marking and grading of research projects are taking place.

- To ensure an objective evaluation of the students, the programme follows the Assuring Learning document guidelines and implements pre-and-post internal moderation processes. A Moderation Committee Analysis Report was provided to the Panel as a sample summary of the moderation activities that took place during Semester II of the Academic Year 2021-2022. External moderation is not yet implemented in the programme, and this will be further explored in Indicator 3.3.
- The Regulations of Professional Conduct Violations at UoB govern students' misbehaviour and regulate misconduct, cheating, and anti-plagiarism. Additionally, an Anti-Plagiarism Policy approved by the University Council in 2013 is applicable to all university staff and students. As for appeals, the UoB Regulations of Study and Examinations document describes the provisions for grievance against the outcome of an assessment decision, and the provisions of cheating in examinations. Students may submit an appeal application against their result to the Department. The Department then forms a special committee to handle the appeal request. Cases of appeals were provided to the Panel among the evidence.

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 Admissions Policy, as stated in the Study and Examination Regulations, clearly outlines the admission requirements at the university and college level. Both female and male students are accepted into the programme on an equal basis. The admission policy and procedures also ensure that special needs students are well-accommodated for. The policy requires a minimum of (70%) as a cumulative high school average on condition that the student applicant is graduating from the scientific/industrial high school track with a score no less than (85%) in the scientific subjects. In addition, the policy requires the passing of the University Aptitude Test (UAT) and an interview. All information related to admission policy and procedures is posted on the university website and as confirmed through interviews, is clearly communicated to the relevant stakeholders.
- Newly admitted students who do not meet the English language requirements set by the CoE are required to take an orientation programme comprised of one semester focused on enhancing their English language proficiency. The CoE requirements that exempt students from this orientation include the following: students achieving a cumulative high school average of (90%) and above, or achieving a (90%) score in English in high school, or passing an exemption English language examination on admission, or scoring at least (500) on the TOEFL or (5.5) on IELTS. From the Orientation Programme Description submitted as evidence and from what was reported in interviews, the Panel is satisfied that the remedial support measures provided for newly admitted students are appropriate.
- Checking the programme's admission criteria and requirements, as well as its remedial support measures, against those of similar programmes in other regional and international universities, the Panel finds them to be comparable.

- The Study and Examination Regulations includes information for students transferring internally from other colleges or externally from other universities. Credits can be transferred for comparable courses that a student has successfully completed elsewhere with a minimum grade of 'C'. Interviews confirmed to the Panel that internal transfers can be initiated only after the necessary approvals are granted from the students' academic advisors in their original colleges.
- Interviews with the senior management of the programme indicated that the admission policy and criteria are regularly reviewed based on student performance, feedback from the PAC, and regional and international benchmarks. Their latest revision took place in the year 2022.

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: Partially Addressed

- As stated in the SER, the programme adheres to the university policies and regulations for faculty recruitment, induction, appraisal, promotion, and professional development. From interviews with various stakeholders and relevant evidence, the Panel concluded that these policies and regulations are translated into clear procedures that are implemented both consistently and with transparency.
- Induction of new faculty members is conducted by the EEED and the Unit for Teaching Excellence and Learning (UTEL), which covers academic policies and procedures, faculty rights and duties, and professional development opportunities available. Additionally, a faculty mentorship initiative is underway; as the UTEL has put forward a related policy that stipulates that senior faculty members mentor new faculty, but this policy was still pending approval at the time of the virtual visit/review.
- Appraisal of faculty is conducted primarily by the HoD and is linked with the annual evaluation process of the Civil Service Bureau. In the end of every semester, an evaluation of the faculty member is also conducted by the students through the course evaluations. Faculty appraisal results are used for contract renewal and/or academic promotion purposes, as was confirmed in interviews and stated in the SER. Also, in some cases, nominations are made by the HoD based on appraisal results for faculty to be trained by the UTEL on teaching and learning. There is also support provided for attending workshops, conferences, and other related activities, as indicated by the list of professional development programmes attended by faculty in the last three years. The Panel appreciates the programme's capitalization of the UTEL services in inducting new faculty

members, and professionally developing existing ones, based on needs identified through the regular appraisal process.

- Clear regulations are in place with respect to academic promotion at UoB. These are adhered to by the programme and are based on three main pillars: teaching performance, scientific research publications, and community service contributions. In the EEED, only two faculty members were promoted to the rank of professor in the last five years.
- Interviews with faculty and senior management confirmed to the Panel that scientific research is encouraged by the University and the CoE, mainly through reduced teaching time and the provision of research grants/funding according to the relevant UoB policies, whenever possible. The CoE also regularly organizes 'The Smart City Symposium' in which the faculty and students showcase their research works and publish, as a way of encouraging scientific research in the College. Interviews also confirmed that the research outcome of the EEED is reasonably satisfactory. However, when asked in interviews about whether the programme has any specific themes to guide the research or whether it is guided by any research plan at the college level, no clear answer was provided to the Panel. The Panel, thus, recommends that the College should develop a research plan that is aligned with the university strategic plan and the college mission and operational plan, and ensure that all research in the programme is conducted according to its key components.
- The Panel noticed that the faculty members teaching on the programme are specialized in a variety of areas relevant to the programme's discipline and qualification level. They also possess the academic qualifications and professional experience needed for teaching on the programme. Interviews with the senior management of the programme confirmed that the student to faculty ratio is 26:1 including the part-timers.
- As for the current faculty workload, each faculty member teaches five courses a semester and takes on the supervision of one graduation research project. The senior management explicitly mentioned that this load is high and does not allow time for research and community engagement. This is in addition to a shortage in the technical staff supporting the programme's faculty especially in the laboratories. Despite the reliance of the programme on part-time faculty, the Panel is of the view that the EEED needs to expand its academic workforce and technical support staff by increasing recruitment, to ensure the sustainability of the currently existing quality teaching in the programme and to allow more time for scientific research, which would enhance the quality and quantity of scientific publications of the faculty. Therefore, the Panel recommends that the College should urgently develop a recruitment plan to hire new faculty members and technical support staff for the EEED.
- As reported in interviews, the Student Information System (SIS) generates reports about faculty retention, progression, and attrition and the College has access to the statistics in these reports. The numbers presented in the SER indicate a decrease mainly in Assistant

Professors (from 75 to 65) and full Professors (from 10 to 7) in the College within the last three years. Interviews explained that this was mainly due to a strong wave of early retirements. However, no similar statistics were presented per department or programme. Nonetheless, the SER mentions that attempts are there to improve faculty turnover, and explains that to retain academic staff, the College offers an attractive compensatory package, professional development opportunities, and the opportunity for career progression through academic promotion.

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: *Partially Addressed*

- The College has an adequate number of classrooms and laboratories that are also adequate in size to run the programme. In addition, access to shared facilities on the university campus if needed is provided, as was confirmed to the Panel through the site visit tour. Generally, the Panel confirms a good student and alumni satisfaction rate toward the university infrastructure in terms of space, as was conveyed during interviews. However, the same cannot be said about the equipment available in the laboratories; as, interviews as well as the campus tour revealed that some equipment is outdated, and that laboratory supplies and tools are not sufficient. The Panel, thus, recommends that the College should review the equipment and supplies used in the programme to ensure their currency and sufficiency based on student numbers and needs.
- The Information Technology (IT) infrastructure on campus is supported through the university policy framework, which ensures that Wi-Fi is available across the campus and that university email is used for official communication. There is also an adequate number of specialized laboratories and general computing facilities, as was confirmed during the campus tour. The specialised software installed in the IT laboratories (e.g., MATLAB, LabVIEW, Multisim) is easily accessible by the students and is continuously renewed in terms of licenses by the University.
- The University has a central library in addition to the Engineering Library that supports the B.Sc. in Electrical Engineering programme by having adequate facilities and resources, among them (124) study spaces, with (22) seats having a desktop computer, and one group study room. In addition to printed books and journals, the UoB libraries provide remote access to digital catalogues and portals that include subscriptions to electronic databases and thousands of electronic sources. The opening hours of the Engineering Library are also adequate, allowing users enough time to utilise the facility. The Panel appreciates the resources and services provided by the UoB libraries, which adequately support the learning and research needs of the students and faculty.

- Interviews confirmed to the Panel that the college's IT technicians, with the help of the UoB IT Centre, directly manage and maintain the College's IT facilities by regularly checking and reporting on the state of computing facilities and recommending replacements or upgrades as needed. Other maintenance is carried out by the maintenance team based on special requests. During the campus tour, the Panel noticed that one of the elevators was not working and that toilets were not equipped for students with special needs. The Panel also found little evidence of preventive and curative maintenance in place. As a result, even though during the time of the interviews it was confirmed to the Panel that the malfunctioning elevator had been fixed and that the College is in the process of outsourcing all preventive maintenance issues to external companies, the Panel recommends that the College should implement formal mechanisms to ensure that maintenance of its facilities is systematically undertaken and that all stakeholders with mobility issues have easy access to all its facilities.
- In terms of health and safety, the CoE has clear and well-displayed laboratory safety guidelines and signs for users. This is in addition to general UoB security and safety procedures for all stakeholders, which were noticed by the Panel during the campus tour. These are complemented by escape exits, automatic fire doors, fire extinguishers, first aid kits, and evacuation procedures, spread around the campus. The Panel finds these arrangements for ensuring the health and safety of students and staff on campus satisfactory.

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

- The University's SIS is used for multiple purposes and provides a range of student data including personal and academic information, registered courses, attendance, progress, and transcripts. The portal of the SIS also enables student feedback on courses, grade appeals, and academic advising, as was demonstrated during the virtual IT demo session.
- From interviews, the Panel confirms that data is drawn from the SIS for academic planning and decision-making purposes. To mention only a few, the data/reports generated from the SIS help senior management decide on the specific set of courses/sections to be offered; allocating and scheduling faculty load and student timetables; how to create class-laboratory combinations; and how to determine maximum capacity size for each class.
- Other types of tracking reports used for decision-making mentioned during the interviews and campus tour include laboratories' utilization logbooks and e-learning reports generated by the university's learning management system, Blackboard, which is

accessible by both students and faculty. This system was heavily relied on during the COVID-19 pandemic.

- The virtual IT demo session demonstrated how the SIS implements several access authentication mechanisms and access control to protect student data and ensure its confidentiality and integrity. The University also has policies and procedures in place to check the accuracy of results and security of learners' records. There is also a regular backup and recovery of data, all of which are mechanisms and procedures that the Panel is satisfied with. The Panel also confirms from interviews that the accuracy of the student results is cross-verified by the course instructor, programme coordinator, and the HoD and that there is a clear and multi-level monitoring mechanism in place to ensure, with the help of the SIS, the accuracy of the awarded student certificates and transcripts and their issuance in a timely manner.

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

- The University provides various support services for students through its libraries, laboratories, E-Learning Centre, clinic, and Guidance and Counselling Department. Most of these services are overseen by the Deanship of Student Affairs. Support is available through the college laboratories *via* the technicians they employ, and through the university library, which in addition to all the services it provides, delivers information literacy training to enrolled students in addition to the library orientation programme for newly admitted students, as was confirmed during interviews and the campus tour. A clinic is also available on campus to provide students and other stakeholders with healthcare and to make referrals to nearby hospitals when needed.
- Counselling services are available through the Guidance and Counselling Department that caters mainly to students with social or personal problems. Special needs' students also benefit from the counselling services provided and receive focused attention from their academic advisors, each based on their need. Despite UoB's emphasis on inclusion of students with special needs, however, the Panel noticed that the physical resources available in the College, such as elevators and ramps, are not always in proper working condition to meet the needs of physically challenged students (see the recommendation under Indicator 2.3).
- As for inclusion in terms of gender, UoB puts an effort in ensuring that equal opportunities are available for both men and women when it comes to admission, support services, and training opportunities among other things, as was reported in interviews.

- Students at risk of academic failure, also constitute a group that receives targeted counselling and assistance from the Guidance and Counselling Department. They also receive support directly from their academic advisors. During the virtual interviews, however, the Panel found that very few students visit their academic advisors. The Panel, thus, advises the College to encourage greater advisor-advisee engagement.
- Interviews confirmed to the Panel that, often, students' instructors and academic advisors are found to provide their advisees with information on career prospects in addition to advising them about their courses and academic affairs. The Career Counselling Office at UoB also provides a range of related services such as a career day for student-employer interactions, informs students about opportunities for employment, and raises awareness about university–industry collaborations.
- Another form of support provided for all newly admitted students is the formal induction organized by the Advising Committee. In it, students are introduced to rules and regulations that apply to them and to their rights and responsibilities, among other things. Interviews with students confirmed their satisfaction with the induction process.
- In general, UoB has several mechanisms in place for eliciting student feedback about the effectiveness of the support services it provides students with. For example, surveys (e.g., student's experience survey; senior exit survey; alumni survey) are an effective mechanism used to collect such feedback and enact improvements accordingly. The SAC is another source of feedback that the programme relies on, and to which decisions/changes made based on student feedback are reported.

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

- In line with UoB's Regulations of Study and Examinations, various assessment methods (e.g., quizzes, examinations, practical/laboratory assignments, and projects) are used in the programme for assessing students' knowledge and skills. Samples of students' assessments were provided in the course portfolios, which the Panel examined and found to be adequate in terms of their level and in terms of assessing the different learning outcomes, thus, ensuring attainment of the graduate attributes. What helps ensure proper alignment of these assessments with the learning outcomes and graduate attributes is that a syllabus/specification is developed for every course in the programme which contains a CILOs-PILOs mapping table/matrix, various assessment methods integrated and aligned with the CILOs, the frequency of each method within a semester and its percentage weight, and related teaching/learning methods.
- At the end of each course delivered, an Excel sheet is prepared by the course instructors showing the achievement level of CILOs and PILOs. This Excel sheet becomes a part of the course portfolio. The Panel reviewed details of a sample of Excel sheets and is satisfied with the comprehensive level of information they provide. The Excel sheets from all the courses and the results in terms of the level of achievement of CILOs and PILOs for each semester are evaluated by the QAC and then discussed in the programme's Annual Report with any improvement actions needed. In addition, PILOs' achievement in the programme is measured indirectly mainly through the results of the Senior Exit Survey which graduating students complete, to assess if the PILOs/SOs have been met; and participating students in this survey get to provide comments or suggestions for improving the students' experience at UoB.
- As for monitoring the implementation and improvement of the assessment process, interviews confirmed that the QAC checks the consistency, level, and quality of assessments using course portfolios submitted by the faculty members in the end of every semester. This is in addition to preparing the PILOs' achievement report. After this, the

QAC decides on the improvement actions necessary and then becomes responsible for following up on these actions.

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 EEED proactively addresses issues related to academic integrity as per the policies and procedures of UoB, which apply to both faculty and students. As mentioned in interviews and stated in the SER, these also include policies and procedures related to scientific research ethics, cheating, plagiarism, and to disciplinary measures and penalties for the different types of academic misconduct cases. The Deanship of Student Affairs ensures that stakeholders are informed of the academic integrity policies, procedures, and regulations by including them in booklets/brochures that are distributed to new students and faculty during their respective induction programmes.
- The University relies on the plagiarism-detection software (Turnitin and SafeAssign) to check similarity in assignments and, thus, detect cases of academic misconduct. Training in the use of these software is also provided. Although the accepted similarity percentage in the Department is set to 25% or less, interviews with faculty confirmed the use of professional judgment rather than sole reliance on similarity percentages when checking for plagiarism.
- By examining a sample of similarity reports as well as recorded cases of academic misconduct, the Panel concluded that policies and procedures for deterring and detecting plagiarism and academic misconduct are consistently applied and relevant appropriate actions are in place.

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: Partially Addressed

- There is a clear Assessment Moderation Policy in place which was approved in March 2022. The policy describes the university's approach to ensure that assessment is fit-for-purpose, rigorous and fair through moderation processes. The Department has a moderation committee to ensure smooth running of the moderation process. Internal

moderation is well established in the Department. A list of course instructors and corresponding internal moderators and their activity log is maintained by the Department.

- Pre-and-post internal moderation forms are completed for each course offered in the programme, which contributes to the review of courses. However, the Panel did not find any comments made by the internal moderators regarding the improvement of the programme, nor was the Panel able to verify the presence of appropriate mechanisms for the evaluation of the effectiveness of the programme's internal moderation. The Panel, thus, recommends that the College should ensure that internal moderators highlight the strengths and weaknesses (if any) of the programme, which may help contribute towards the programme improvement plan.
- The Panel notes that the Department so far has only been able to complete internal moderation and has only recently been able to assign external moderators for a few courses. During interviews, the Panel was made aware of the difficulties facing the Department in finding external moderators. This issue was raised with the CoE and a suggestion to make use of established memoranda of understanding was made.
- Some evidence of external moderation is present but it is not well-established. There is also lack of evidence of any mechanisms being used to evaluate the effectiveness of the minor steps taken in the programme's external moderation. The Panel, thus, recommends that the College should develop robust plans to ensure that external moderation is formally in place and regularly conducted, and to recruit multiple external moderators from different areas of expertise, to review the relevant courses and their assessments and contribute towards the betterment of the programme overall.

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

- Work-Based Learning (WBL) is well established in the Department. The college's Industrial Training Procedure describes in detail the entire process of WBL *via* internships. The Procedure ensures that all students understand the process through which they can secure an internship placement, and outlines the trifold process of pre-training, in-training and post-training activities. Templates of all forms required during the training period are also included in this procedure document.
- The Department has a recognized Internship and Placement Committee responsible for ensuring even administration of the entire internship process. The University Internship Policy outlines the roles and responsibilities of the trainee, training provider, and the

academic supervisor, and these are explained to the students and supervisors in pre-training workshops and presentations organized by the Department and the College. The students are given an opportunity to express their placement preferences. The student can directly contact the training provider with support from the department's Internship and Placement Committee. An acceptance letter is issued by the training provider when a placement offer is made to the student.

- The WBL component contributes effectively to the achievement of the ILOs as clear from the mapping of the six learning outcomes of the 'Industrial Training' (EENG390) course with the relevant PILOs in the course specification, and also from the Excel CILOs-PILOs Achievement Evaluation sheets.
- The assessment structure of the WBL component is clear and appropriate to the level and content covered. As part of their training course assessment, the students are required to submit a detailed report and present their work orally. These assessments form a part of the overall evaluation of student's work during the placement. There is active involvement of both the academic supervisor and the industrial/field supervisor in the learning journey of the student on placement. Monitoring and assessments take place *via* tripartite meetings which include the student, academic supervisor, and the industrial/field supervisor. The students are required to sign-off weekly breakdown of internship activities, which is a good practice. Such a practice can help students consolidate the skills they have learnt and can also help them identify gaps in their learning, which they can work on and improve.
- The SER shows results from surveys conducted with students who have completed placements. The survey results give a good indication that the students are overall satisfied with the training as well as the training providers. The Panel did not find any evidence of such surveys being conducted on the industry/field supervisors, to identify strengths and areas of improvement (if any) in the WBL component. Even in the interview with the training providers, the Panel noted that most of them did not recall completing any surveys for the Department. The Panel urges the College to ensure the implementation of such surveys on a representative sample of internship field supervisors as important programme stakeholders, as recommended in Indicator 4.4, to make use of the analyses of their results in WBL and programme improvements.

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: Addressed

- The 2021 ABET final statement report recommended that the B.Sc. in Electrical Engineering curriculum should include a culminating major engineering design experience that incorporates appropriate engineering standards and multiple realistic constraints. The Department addressed this ABET recommendation in the new course descriptions of ‘Senior Design Project I’ (EENG495) and ‘Senior Design Project II’ (EENG496). These courses have ILOs that are in proper alignment with the PILOs and provide students with an opportunity to apply the knowledge and skills acquired in their first few years in the classroom (*via* course lectures, tutorials, and laboratories) to real-world problems.
- There is a well-established committee in the Department to facilitate the smooth operation of senior projects. The committee is responsible for implementing the college policy and procedure written specifically for senior projects. This document details the roles and responsibilities of the supervisors and the students alike.
- Senior project supervisors advertise their project topic(s). Students either choose a topic from the list of advertised topics or suggest a topic of their own at the start of the semester. Supervisors guide their project students throughout the journey of the project, from inception to completion. This is done through regular project meetings which are also used to review the progress made by students.
- The summative assessment of the project is *via* a report and a project poster (in the form of PowerPoint/PDF slides), which are evaluated with the help of external examiners. The templates for both are provided to the students and these, with a sample of students’ senior projects submitted as evidence, happen to indicate the appropriateness and comparability of the level of the senior projects to other equivalent programmes. The Panel appreciates the senior project exhibition at the college level where the students have an opportunity to showcase their work and receive recognition for their achievements. The winners with their project topics are entered in the senior project booklet at the end of each semester. The Panel advises that potential employers be also invited to such events, which can help them identify talent and could potentially improve employability.
- The Panel did not find any evidence of a mechanism in place for reviewing and regularly monitoring the implemented supervision and assessment process, in line with continuous improvement. The Panel, thus, recommends that the College should develop a comprehensive mechanism for monitoring the process of senior projects’ allocation, supervision, and assessment, including the monitoring of students’ satisfaction with the supervision process and the resources available to carry out scientific research required for their senior projects.

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 programme relies on the ABET SOs to define the knowledge and skills to be achieved by the graduates. This helps ensure that graduates achieve internationally accepted benchmarks at the time of graduation. Furthermore, the achievement of the CILOs, PILOs and PEOs is evaluated and documented each semester by faculty members who develop their course assessment reports to assess the students' performance, analyze their results, and develop improvement action plans for those CILOs whose achievement level is below expectations. The Panel found these reports to be comprehensive and informative and is of the view that, collectively, all this constitutes an approach that enhances the programme's confidence that its graduates achieve knowledge and skills comparable to regional and international standards. Additionally, a review of the students' works and achievements included in the course portfolios, with the sample of the students' senior projects, confirmed to the Panel their appropriateness and the students' ability to innovate and create.
- Upon the Panel's request, the Department provided cohort statistics for four student batches starting from 2018-2019 till 2020-2021, and a comprehensive attrition report analysis produced by the QAAC in 2020. The report shows high annual dropout rates over a period of six years, from 2013-2014 till 2018-2019. The report concluded with identifying areas to improve student retention through academic advising, counselling services and extracurricular activities, and conducting entry interviews and aptitude test. The Panel affirms that this report is a very important tool to address this matter and encourages the Department to keep track of annual student progression and attrition statistics. The Panel was also informed through interviews that most of the drop-out cases in the Department are during the first and second years of study due to students struggling in basic mathematics, physics, and chemistry courses. In August 2022, the UoB issued a decree to allow students unable to continue their degree studies to apply for enrollment into an Exit Programme and study for a certificate of Associate Diploma of Science in Electrical Engineering, which the Panel considers as a step in the right direction. Nevertheless, the Panel recommends that the College should develop a detailed and robust action plan to address the high dropout rate from the programme.
- The Department provided alumni profile files including employability data for the last five academic years, with the employment status for each cohort; however, no information on employment destinations was presented. The Department also provided the latest employer survey conducted in 2022, which involved only 14 participants and included one question on the academic programme PEOs achievement level, another on whether the graduates of the programme pursued additional education (Graduate Studies) after graduation, and a third on competency skills. However, no analysis or conclusions were provided for this survey. The same applies to an earlier employers and alumni survey that was conducted in 2014 and to a 2021 employers' survey. The Panel thus recommends that the College should systematically monitor external stakeholders' satisfaction with B.Sc. in

Electrical Engineering graduates and use the feedback collected and its analyses to inform programme reviews.

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

- UoB has a comprehensive academic Quality Assurance (QA) system composed of extensive documentation in the form of manuals, policies, and procedures. These include among other things a university Quality Assurance and Enhancement Policy and a Programme Quality Assurance and Enhancement Policy that was developed in 2015. These are available on the university's QAAC webpage, and new policies, procedures, and regulations are emailed to all faculty members and related administrative staff, as was reported in interviews.
- The QA structure at UoB consists of the QAAC, Quality Assurance Office (QAO) in each college with its respective director, the QAC at the level of each programme, the PAC, and the SAC. There is also a Quality Assurance & Accreditation Executive Committee (QAAEC) headed by the QAAC Director and comprises the President's Advisor for Quality and all the QAO Directors from the different colleges.
- The Quality Manual emphasizes the importance of establishing a culture of academic quality, self-assessment, and improvement within the University by offering customized consultations and training workshops to the relevant stakeholders. The Panel verified that the QAC administers training sessions to ensure the performance of the programme through capacity building workshops. The Panel was provided with a sample of QA capacity building workshops on several topics related to ABET accreditation criteria and SER preparation, assessment methods, teaching and learning models, and data management in higher education. Also, the Panel noted during the interviews a satisfactory level of awareness about QA policies and matters among all staff members.
- With respect to monitoring, evaluating, and improving the QA management system, a mechanism for this is included in the Quality Manual. The QAAEC is expected to review QA policies and procedures at the university level; while the QAO is expected to review compliance and accreditation activities at the college level, and the programme QAC to review the programme-level quality assurance processes. A review of the evidence and an

analysis of the interviews conducted indicated that oversight of QA processes is primarily focused on course file/portfolio audits, course evaluation reports, students' course evaluation results, policy revisions, and ensuring that QAC feedback is effectively followed up upon and improvements are made in response to recommendations and action plans. The Panel examined, and affirms, the efficacy of evidence provided on regular course portfolio audit reports produced by the QAC, and the university-wide comprehensive course evaluation report produced by the QAAC. Consequently, the Panel is generally satisfied with the mechanisms in place to monitor, evaluate, and improve the QA management system.

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 programme management and leadership are represented by the Dean of the College, QAO Director, the HoD, and the QAC. In addition, the College Council provides leadership at the college level and sets the strategic direction of the programme; while the Department Council chaired by the HoD is responsible for the academic and administrative operations of the programme. From interviews and the review of evidence, the Panel notes that the programme is being guided and managed appropriately by means of the current organizational structures and hierarchies in place.
- A set of committees at the department, college, and the university levels assists the College with the management of the programme and links the decision-making processes across the different levels of the University. The EEED has representation in the college and university level decision-making committees. From interviews with faculty and administrative staff, the Panel notes that the existing reporting lines are clear and support and facilitate adequate communication and decision-making across the College.
- The Quality Manual includes all the terms of reference of all committees, which the Panel examined and found to be clear. The Quality Manual additionally includes job descriptions of leadership positions and faculty members. The Academic and Administrative Staff Bylaws include the roles, responsibilities, and authorities of key personnel, such as the University President, Deans, and HoDs. Despite this clarity of the committees' responsibilities and the duties of the key management positions, the Panel notes that every EEED faculty member is serving on multiple committees at the same time. This is in addition to the high teaching loads they carry (See Indicator 2.2). The Panel is thus concerned that membership on so many committees may lead to confusion along the lines of accountability and possibly even to conflict of interest sometimes. The Panel, thus, recommends that the College should ensure that the EEED revisits the number of

committees a faculty member can simultaneously serve on per semester and carefully reviews the composition of its existing committees to make changes accordingly.

- The SER explicitly states that the HoD is responsible for the custodianship of the academic standards of the programme at the department level. However, his responsibility is shared with the faculty in the Department, and is guided and supported by the College Dean and the different academic and administrative structures within the College and the University (e.g., committees, councils, units, offices, departments, etc.). This was confirmed to the Panel from interviews with college administrative and academic staff.
- With the effective organizational structures and hierarchies in place to guide and manage the programme; the clear reporting lines that support communication and decision-making across the College; and the well-defined managerial positions and clear roles and responsibilities, the Panel is of the view that the current management of the B.Sc. in Electrical Engineering programme is appropriately demonstrating effective and responsible leadership.

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 EEED applies an annual self-evaluation process developed by the QAAC for every programme it offers, by making use of the self-evaluation template report in the evaluation of key elements to measure the programme's performance toward achieving its objectives. Each semester the elements to be evaluated include the programme profile, students and faculty profile and statistics, research outcomes, programme and course evaluations, and feedback from a range of stakeholders, in addition to course portfolios' data. Every data element presented in the annual report is followed by an analysis and a discussion section which highlights key findings. A concluding section on opportunities for improvement based on the analysis of all sections identifies an action plan forward.
- The Panel recognizes the value of information and detailed nature of this report. However, the Panel notes that although the report addressed in its last sections some findings such as those related to accommodating the offered courses to the rapid engineering developments and the recent knowledge trends related to the Electrical Engineering field by introducing the new 2022 Electrical Engineering programme; the report nonetheless overlooked addressing some critical findings such as the heavy faculty teaching load leaving minor room for research activities, and the lengthy bureaucratic process of hiring faculty, technicians, and teaching assistants. The Panel, thus, recommends that the College should ensure the comprehensiveness of the programme's annual self-evaluation report

in terms of the elements analyzed and addressed in it, and its inclusion of the achievement level of different elements of previous annual reports' action plans, so as to gain insight of progressive improvements.

- The QAC and the College Council supervise and assure compliance with QA processes and offer recommendations for adjustments to the programme based on findings and recommendations made by all stakeholders, which are all covered and discussed in the annual report. The Panel noticed that the College Operational Plan for the years 2019-2023 describes specific actions without linking them to annual achievements of key performance indicators as analysed in the programme's annual report. The Panel thus advises that better linkage be established between the results of the annual reports and the contents of the operational plans.
- The recent Annual and Periodic Programme Review Policy that was approved on 31/03/2022 and the Internal Quality Review Policy both stipulate, and clarify the mechanisms for, the implementation of periodic reviews of academic programmes, to evaluate the effectiveness of the QA mechanisms in place for their management. The Panel was informed in interviews that ABET accredited programmes are exempted from periodic reviews as per the UoB Annual and Periodic Programme Review Policy which states that 'Academic programmes with valid programmatic accreditation are exempted from Periodic Programme Review'. Still, however, the Panel noticed that the 2022-2023 Operational Plan illustrates the frequency of periodic reviews for all programme elements, which are the responsibility of the QAC and College Council, and realized that the frequency of periodic reviews conducted is not in line with the Operational Plan. The Panel thus advises the Department to ensure consistency between periodic reviews conducted on programme elements and timelines stated in the College Operational Plan.

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*

- UoB has a Benchmarking policy which the B.Sc. in Electrical Engineering applies. Benchmarking of the programme took place in 2022 with similar programmes offered by two regional and four international universities. The programmes are all ABET-accredited and the benchmarking exercise was conducted informally. The Panel advises the College to try to secure entering into formal benchmarking agreements in the future.
- The results included in the benchmarking report reflect a high degree of similarity between the developed programme and the benchmarked ones. Interviews with various

stakeholders confirmed to the Panel that benchmarking results have been taken into consideration to introduce improvements in the programme.

- In addition to benchmarking results, the programme benefits also from the feedback collected in the form of structured comments from internal and external stakeholders, which is elicited through surveys. These include, for example, the Senior Exit Survey, student course evaluation surveys, and alumni and employers' surveys among others. Feedback is also collected through the programme's advisory committees, the PAC and the SAC. From the submitted documentation and interviews, the Panel was able to find evidence of such inputs being used to inform some decision-making processes in the programme. For example, graduating students' comments or suggestions on the Senior Exit Survey have often been considered for improving the students' experience at UoB.
- The Panel finds that there is still room for several improvements when it comes to collecting and making use of stakeholders' feedback. To mention only a few, the Panel sees a need for the programme to conduct a satisfaction survey on a representative sample of WBL field supervisors as important programme stakeholders, to make use of the analyses of their results in WBL and programme improvements. Additionally, the Panel is concerned with the low survey response rates of the alumni and employers that was clear in the submitted evidence. The Panel is also concerned with the fact that there is an indication of some important stakeholders' feedback being overlooked. This is reflected in the fact that feedback was collected from (15) alumni who had graduated from the programme between 2018 and 2021 and the detailed alumni survey results provided valuable and critical comments given by the respondents that were not mentioned in the SER at all. These comments focus on the need to modernize equipment in the programme and to increase laboratory sessions, while emphasizing industry applications in the courses' delivery, recruiting more faculty especially for elective courses, and the need to enhance students' awareness on available jobs in the electrical engineering field and to host related guest speakers. On the same note, the Panel verified during interviews that there is a greater need for collaboration between the College and the industry professionals, to increase their involvement in the development of the programme. Based on all the above, the Panel, thus, recommends that the College should ensure that the programme expands the pool of external stakeholders that it surveys to include the internship supervisors; develop a robust mechanism for improving its survey response rates; and consider all stakeholders' comments and/or recommendations when reviewing the programme and developing action plans targeting improvement.

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: *Partially Addressed*

- The B.Sc. in Electrical Engineering has a functioning PAC with clear terms of reference that regulate and guide the duties of its members. Interviews with the PAC members and with the senior management of the programme confirmed that the aim of the PAC is to contribute to the design and review of the programme's curriculum, enhancement of course delivery, and general improvement of the programme. The PAC comprises employers, alumni, and representatives from the public and private sectors, who meet as a committee once a year. The Panel noticed that most of the PAC members are electrical engineers rather than electronic although the PAC serves the EEED as a whole, including its two programmes. When asked about such a composition during interviews, the programme team responded that it is because the Bahraini sector is overlapping in terms of the two fields. While this may be the case, the Panel advises the Department to work on striking a balance within the PAC in terms of its members' specializations.
- Although what was reported during interviews indicates that some of the PAC feedback has been used to inform decision-making processes in the programme, such as for example operational planning, the Panel recommends that the College should exert greater efforts to incorporate PAC and SAC feedback in academic decision-making and planning, and to strengthen the ties between the College and the industry. One important PAC recommendation that the Panel finds has not yet been addressed is that of adding new and latest technologies in the field within the programme's courses.
- Additional mechanisms relied upon in the programme to understand the labour market and societal requirements include the student, alumni and employer surveys. Labour market studies also fall in the same category. The College conducted such a study in 2021 in the form of a market survey on professional engineers working in the Bahraini Electrical and Electronics Engineering Industry and representing eight companies. The purpose of the study was to ascertain the validity of the programme and to investigate the requirements of its field and the skills needed by the market. The study resulted in a report indicating mainly that there is a big market for Electrical Engineers, with a high need for graduates from the programme in the next 10 years. The Panel acknowledges the value of these studies in keeping the programme relevant and up-to-date. However, the Panel recommends that the College should resort to research tools other than surveys (e.g., interviews, focus groups, published statistics, or a combination of these), which could possibly provide more detailed analyses of the labour market and thus better inform the programme of its specific needs.
- The Panel was unable to find what indicates a systematic and well-documented monitoring and review process of the important mechanisms employed in ensuring that the programme meets the labour market and societal needs, as nothing was mentioned about this in the SER nor in interviews. The Panel, thus, recommends that the College should review and evaluate the mechanisms used to ensure that the programme meets labour market and societal needs, so as to guarantee their effectiveness.

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 B.Sc. in Electrical Engineering of College of Engineering offered by the University of Bahrain.

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

1. The Department of Electrical and Electronics Engineering efforts in enhancing students research capabilities by introducing research topics within the courses, requiring the writing of an academic research paper, and/or the investigation of research topics as small projects.
2. The B.Sc. in Electrical Engineering programme's capitalization of the Unit of Teaching Excellence and Learning services in inducting new faculty members, and professionally developing existing ones, based on needs identified through the regular appraisal process.
3. The resources and services provided by the libraries, which adequately support the learning and research needs of the students and faculty.
4. The senior project exhibition at the college level where the students have an opportunity to showcase their work and receive recognition for their achievements.

In terms of improvement, the Panel recommends that the College of Engineering at the University of Bahrain should:

1. Review the Course and Programme Intended Learning Outcomes mapping of the Electrical Engineering programme, to ensure a well-balanced coverage of Programme Intended Learning Outcomes and their measurement through the programme's courses.
2. Take necessary steps to regularly review course portfolios, monitor delivery tools, and systematically ensure that textbooks and references reflect recent changes in knowledge, coupled with applied case studies and professional practice, in course materials.
3. Develop a research plan that is aligned with the university strategic plan and the college mission and operational plan, and ensure that all research in the programme is conducted according to its key components.

4. Urgently develop a recruitment plan to hire new faculty members and technical support staff for the Department of Electrical and Electronics Engineering.
5. Review the equipment and supplies used in the programme to ensure their currency and sufficiency based on student numbers and needs.
6. Implement formal mechanisms to ensure that maintenance of the programme's facilities is undertaken systematically and that all stakeholders with mobility issues have easy access to all its facilities.
7. Ensure that internal moderators highlight the strengths and weaknesses (if any) of the programme, which may help contribute towards the programme improvement plan.
8. Develop robust plans to ensure that external moderation is formally in place and regularly conducted, and to recruit multiple external moderators from different areas of expertise, in order to review the relevant courses and their assessments and contribute towards the betterment of the programme overall.
9. Develop a comprehensive mechanism for monitoring the process of senior projects' allocation, supervision, and assessment, including the monitoring of students' satisfaction with the supervision process and the resources available to carry out scientific research required for their senior projects.
10. Develop a detailed and robust action plan to address the high dropout rate from the programme.
11. Systematically monitor external stakeholders' satisfaction with the B.Sc. in Electrical Engineering graduates and use the feedback collected and its analyses to inform programme reviews.
12. Ensure that the Department of Electrical and Electronics Engineering revisits the number of committees a faculty member can simultaneously serve on per semester and carefully reviews the composition of its existing committees to make changes accordingly.
13. Ensure the comprehensiveness of the programme's annual self-evaluation report in terms of the elements analyzed and addressed in it, and its inclusion of the achievement level of different elements of previous annual reports' action plans, so as to gain insight of progressive improvements.
14. Ensure that the programme expands the pool of external stakeholders that it surveys to include the internship supervisors; develop a robust mechanism for improving its survey response rates; and consider all stakeholders' comments and/or recommendations when reviewing the programme and developing action plans targeting improvement.
15. Exert greater efforts to incorporate the Programme Advisory Committee and the Student Advisory Committee feedback in academic decision-making and planning, and to strengthen the ties between the College and the industry.

16. Resort to research tools other than surveys (e.g., interviews, focus groups, published statistics, or a combination of these), which could possibly provide more detailed analyses of the labour market and thus better inform the programme of its specific needs.
17. Review and evaluate the mechanisms used to ensure that the programme meets labour market and societal needs, so as to guarantee their effectiveness.