



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 Information Technology
Bachelor of Science in Computer Engineering**

Kingdom of Bahrain

Site Visit Date: 7-9 December 2020

HA006-C3-R006

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Acronyms

| | |
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| ABET | Accreditation Board for Engineering & Technology |
| ACM | Association of Computing Machinery |
| APRs | Academic Programme Reviews |
| BQA | Education & Training Quality Authority |
| CAC | College Accreditation Committee |
| CAR | Course Assessment Report |
| CE | Computer Engineering |
| CILO | Course Intended Learning Outcome |
| CIT | College of Information Technology |
| DAC | Departmental Accreditation Committee |
| DHR | Directorate of Higher Education Reviews |
| HEIs | Higher Education Institutions |
| IEEE | Institute of Electrical & Electronic Engineering |
| IEEE/ACM | Institute of Electrical and Electronics Engineers/ Association of Computing Machinery |
| IRQ | Internal Quality Review |
| LMS | Learning Management System |
| MIS | Management Information System |
| NQF | National Qualifications Framework |
| OfI | Opportunities for Improvement |
| PEO | Program Educational Objective |
| PI | Performance Indicator |
| PIAC | Programme Industrial Advisory Committee |
| PILO | Programme Intended Learning Outcome |
| PIs | Performance Indicators |

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| PSAC | Programme Students Advisory Committee |
| QAAC | Quality Assurance & Accreditation Centre |
| QAAEC | Quality Assurance and Accreditation Executive Committee |
| RPL | Recognition of Prior Learning |
| SER | Self-Evaluation Report |
| SES | Senior Exit Survey |
| SIS | Student Information System |
| UILO | University Intended Learning Outcome |
| UoB | University of Bahrain |

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 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 judgments 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 judgment, 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 judgment 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

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|---|--|
| Institution Name* | University of Bahrain (UoB) |
| College/ Department* | College of Information Technology |
| Programme/ Qualification Title* | Bachelor of Science in Computer Engineering |
| Qualification Approval Number | University Council Decision No.(426/2016) of 2016 |
| NQF Level | 8 |
| Validity Period on NQF | Five years |
| Number of Units* | 135 Units |
| NQF Credit | 566 |
| Programme Aims* | <ol style="list-style-type: none"> 1. Engage successfully in careers in the areas of computer engineering to serve the needs of industry and academia or embark on entrepreneurial path. 2. Engage in life-long learning, professional development, seek further learning opportunities, adapt to the changes in the work environment, and attain leadership competencies. 3. Contribute to the welfare of society and the development of the profession through responsible and ethical practice of engineering. |
| Programme Intended Learning Outcomes* | <ol style="list-style-type: none"> 1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics 2. An ability to 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. An ability to communicate effectively with a range of audiences 4. An ability to 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 |

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| | <ol style="list-style-type: none">5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies. |
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* Mandatory fields

III. Judgment Summary

**The Programme's Judgment:
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 | Addressed |
| Indicator 1.3 | The Curriculum Content | Partially Addressed |
| Indicator 1.4 | Teaching and Learning | Partially 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 | Addressed |
| Indicator 2.4 | Management Information Systems | Addressed |
| Indicator 2.5 | Student Support | Partially Addressed |
| Standard 3 | Standard 3: Academic Standards of Students and Graduates | Satisfied |
| Indicator 3.1 | Efficiency of the Assessment | Addressed |
| Indicator 3.2 | Academic Integrity | Partially 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 | Partially Addressed |
| Indicator 3.6 | Achievements of the Graduates | 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 | Partially 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.

Judgment: Addressed

- The Bachelor of Science in Computer Engineering (CE) programme is delivered by the Department of Computer Engineering in the College of Information Technology (CIT) at the University of Bahrain (UoB). The Programme was first approved in 2002 with updates in 2005, 2010 and 2018. CE was accredited by the Accreditation Board for Engineering and Technology (ABET) in 2010 and 2014 with reaccreditation sought in 2020. In 2016 CE was placed on the National Qualifications Framework (NQF). The planning process for the programme design and (re)development is clear and identified in the Regulations for Offering and Developing Academic Programmes and Courses at the UoB. Ongoing quality assurance processes for programmes and courses are identified in the Quality Manual and Assuring Learning document to ensure that the programme is relevant and fit for purpose.
- An annual self-evaluation report for the programme is written including student profile, staff profile, research profile programme and course evaluation and opportunities for improvement (OfI). The annual SER, and in particular the OfI, identifies potential risks to the quality, delivery and standards of the programme. The Panel found evidence that OfIs are acted upon; however, no evidence was found of a risk register identifying risks for the Department or Programme including mitigating actions taken to minimize risks. Therefore, the Panel recommends that the College should maintain a plan/register for identifying and managing risks related to the quality of the programme, as well as an analysis of these risks and their mitigation.
- CE was placed on the NQF in 2016 with NQF level eight, meeting all five NQF validation standards and with 566 NQF credits. The curriculum content has been improved, since

the programme was placed on the NQF, following external benchmarking (See Indicator 4.4). This could impact on NQF Standard 3 'Appropriateness of Qualification Design, Content and Structure' but it is the Panel's view that the curriculum modifications enhance adherence to the NQF. The programme title is indicative of the qualification type and is appropriate for the content of the programme as described in the Programme Specification and the module descriptors. This is supported through benchmarking with the Institute of Electrical and Electronics Engineers/ Association of Computing Machinery (IEEE/ACM). The title is accurately documented on degree certificates and on the UoB website.

- CE has three appropriate Programme Educational Objectives (PEOs). The PEOs are regularly revised as defined in the UoB Quality Manual. The PEOs were reviewed, and modified slightly, by the Departmental Accreditation Committee (DAC) and Departmental Council after consulting the PIAC and by the Accreditation committee in 2020. Stakeholders including, in particular, faculty members, are consulted about the appropriateness of the PEOs of the programme. This is further discussed in Indicator 4.4 and 4.5.
- The PEOs are mapped to the College Mission, the Institution Mission and the UoB Strategic Goals. The Panel noted that the College strategic pillars refer to an entrepreneurial culture (Pillar 3) and excellence in entrepreneurship (Pillar 5). This is addressed in the PEOs and is considered further in Indicator 1.2 below. The Panel is of the view that the CE programme objectives contribute to CIT and UoB's mission and strategic goals.

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.

Judgment: Addressed

- Six University Intended Learning Outcomes (UILOs) are introduced across all programmes, which define the graduate attributes. These are mapped to the seven Programme Intended Learning Outcomes (PILOs) showing an appropriate alignment. The Panel notes that the PILOs have been revised recently, during the academic year 2019-2020.
- The PILOs are stated in the SER and mapped to the PEOs. As noted in Indicator 1.1, entrepreneurial culture and entrepreneurship are noted in the CIT strategic pillars and in the PEOs but this is not reflected in the PILOs. The Panel recommends that the PILOs

should be reviewed to ensure that they reflect the entrepreneurial focus of the College and CE PEOs. The Evidence provided to the Panel demonstrated an appropriate alignment of the PILOs and that they are appropriate for the level of the programme. The Panel examined the provided evidence and found that the CE PILOs are measurable and meet the NQF requirements. The Panel appreciates that international benchmarking is undertaken through ABET. The Panel acknowledges that international benchmarking has been undertaken through ABET. The College claims that the programme is designed to be benchmarked and aligned to IEEE and ACM, the Panel confirmed that benchmarking has been done as part of the programme review. See also Indicator 4.4.

- The Course syllabi list all Course Intended Learning Outcomes (CILOs). Generally, these are measurable and appropriate for the level of the courses although the Panel would advise reviewing the small number of the CILOs which are non-measurable such as those in the course ITCE364, using 'explore'. The Panel notes that all the CILOs are appropriately mapped to the PILOs. This conclusion is reinforced by the fact that the CE meet all the standards for placement on NQF, in particular Standard 3, thus confirming appropriate mapping of CILOs to PILOs. Each year a Course Assessment Report (CAR) is completed by instructors. The CAR maps PILOs to CILOs, marks achieved for assessments and marks mapped against CILOs including improvement actions identified by the instructor where an issue is identified. The Panel appreciates the use of course assessment reports quantitatively, thus demonstrating how a student cohort meets PILOs through the students' course assessment scores and identifying issues with assessments not meeting a CILO together with improvement actions as appropriate.

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.

Judgment: *Partially Addressed*

- The study plan, last updated in 2018, shows appropriate year-on-year progression and suitable pre-requisite courses. Appropriate progression with respect to NQF has been confirmed. The body of knowledge included in the programme aligns with the IEEE-ACM 2016 standard body of knowledge for computer engineering programmes. The workload identified is appropriate and shows a split between lecture and practical workload.
- As per the provided evidence, the curricula of CE are periodically updated in line with the Regulations for Offering and Developing Academic Programmes and the Teaching and Learning Policy. Curriculum review is undertaken by the Curriculum Committee with the most recent review having been carried out in Academic Year (AY) 2017-2018.

The Panel acknowledges the significant evidence of the review taking account of IEEE/ACM curriculum guidelines, benchmarking against international HEIs, and input from stakeholders. The Panel noted that an internal periodic review process has been implemented. This is considered further in Indicator 4.3.

- The course syllabi define practical / laboratory assignments in most courses. The Department of CE claims in the SER that conforming to the IEEE/ACM recommended model curriculum guarantees that there is an appropriate balance between theory and practice. The Panel noted that the IEEE/ACM model does not define how practical work is to be embedded, however it was confirmed during interviews with staff that the Department of CE has a clear process to ensure an appropriate balance of theory and practice by ensuring that all courses have laboratory / tutorial sessions, all 300 and 400 level courses include an integrated course project and the CAR monitoring each year identifies issues with assessments / CILOs. The Panel notes the use of specialist laboratories such as the CISCO laboratory and would suggest embedding industry standard accreditation such as Cisco CCNA/CCNP to enhance students' practical skills and students' employability. Practical skills to support graduate employment are further discussed in Indicator 1.4 bullet 5.
- The Programme demonstrates appropriate depth and breadth of subject coverage as evidenced by the course syllabi, practical exercises and supported by benchmarking to IEEE/ACM external standards.
- Required textbooks and other references are included in the course syllabi. The Panel noted that the recommended textbooks were in many cases outdated with editions from 1996-2013. Whilst this may be appropriate for year one and two courses, for later years of the programme it is necessary to use current textbooks and other learning materials and to incorporate recent research findings and current professional practice in teaching and learning. This is particularly relevant for CE which is such a quickly evolving discipline. The Panel recommends that the Department should implement a formal process to monitor the reading lists, research findings, particularly for year three and four courses, to ensure that these are updated regularly, and that current professional practice are used in the subject.

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.

Judgment: *Partially Addressed*

- UoB has a teaching and learning policy which refers to using current teaching methods. The policy is updated every five years and is owned by the Unit for Teaching Excellence and Leadership. The Panel noted that the policy is very generic. The Panel is of the view that this policy alone is inadequate as a useful guide of teaching and learning in a programme such as the CE programme. See the recommendation in the next bullet.
- CE has a formal programme specification which does not identify the teaching methods used. There is also an Academic Plan of the programme, however, this does not define the teaching and learning methods to be used in the programme. The Course syllabi describe teaching methods used in each course. Generally, these include interactive teaching, problem solving and practical and laboratory learning but not additional current teaching and learning methods. It is the Panel's opinion that the Unit for Teaching Excellence and Leadership could be utilised to ensure that teaching and learning methods are kept up to date. The Panel recommends that a teaching and learning strategy, owned by the Unit for Teaching Excellence and Leadership or CIT, should be developed to support the development of current teaching methods for courses and to focus efforts on professional development initiatives for teaching staff. The Panel suggests that teaching materials are included in the course portfolio to provide a more complete picture of course content and delivery. The Panel also suggests that the laboratory opening times are monitored to ensure maximum access for students. It was confirmed during Interviews that syllabi are representative of teaching methods used. It was also confirmed in a graduate exit survey that 86% of graduates felt that a wide variety of teaching methods were used in the programme.
- The UoB Teaching and Learning Policy refers to 'technology is integrated in the learning experience' and that 'the learning environment fostered is physical or virtual as appropriate to the discipline needs'. UoB has created the UoB e-Learning Centre to support faculty in the use of online learning tools. UoB claims that most courses are available on Blackboard. The Panel learned from interviews that most courses are available on Blackboard and used by students. As e-learning is not identified in the UoB Teaching and Learning Policy, the Panel recommends that the use of e-learning should be added to the teaching and learning policy and CIT teaching and learning strategy (as indicated above) and embedded as part of teaching and learning practice within the programme.
- The Teaching and Learning Policy specifies that 'students are empowered to take responsibility of their own learning to develop their lifelong learning skills'. The Policy doesn't specifically refer to application of theory to practice, however it states that 'Learning activities and assessment tasks are aligned with the course learning outcomes.' The Teaching and Learning Policy is further discussed in Indicator 1.4 bullet 2 above. To conclude, in the panel's opinion, the teaching and learning policy does generally encourage students' participation in learning, exposure to professional

practice/application of theory where applicable, and development of independent and lifelong learning but this should be supplemented with a strategy that specifically addresses how this can be achieved.

- The SER claims that ‘All CE courses have practical and projects components that are supporting life-long learning and motivate students to create and innovate’ and that ‘the term project and senior project components encourage the students to solve real-life problems’. The Panel confirmed from interviews with faculty members and evidence that practical work is embedded in courses and the Senior Project does incorporate the aspects described to support creativity and innovation. However, the Panel also learned during interviews with students that there are concerns that appropriate skills are not being provided to support employment on graduation. Therefore, the Panel recommends that UoB should review practical aspects of the course to ensure that the skills being taught are in line with current industry practice. The Panel also noted that the Senior Project is a group project which is unusual for a final year degree work that has a significant impact on the student’s degree classification. However, the Panel did not identify adverse feedback with regards to the adoption of this approach.
- The concept of lifelong learning through a wide range of formal, informal and non-formal teaching is stated in the Teaching and Learning Policy and encouraged as defined in the course syllabi. The Panel confirmed during interviews with faculty members that a wide variety of teaching does take place in CE including interactive teaching, problem solving learning, practical and laboratory learning and workplace learning. The Panel acknowledges that the workplace learning in the CE programme is, in practice, helpful as an introduction to lifelong learning, as discussed in interviews with the employers. However, The Panel suggests that a more specific guidance on lifelong learning to be included in the CIT teaching and learning policy/guideline/strategy document.

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.

Judgment: Addressed

- UoB has an assessment framework in place encapsulated within the ‘Study and Examination Regulations’. This is supplemented by the College of IT which has developed ‘CIT Assessment Strategy/ Assessment, Grading, and Exam Moderation Guidelines’. Further CIT has developed a special assessment policy to cover the current Covid-19 situation. The Panel confirmed that framework and guidelines are appropriate for the level of the programme and are fully implemented.

- The SER claims that the course specification forms are disseminated to students during the first lecture of a course. The forms include the schedule, weighting, type and criteria for marking of assessments, as well as, the mapping of CILOs to PILOs. The Panel was able to confirm during interviews that the examination regulations are available on the UoB website and that policies and procedures also are mainly online.
- The SER claims that formative and summative assessments are used in CE. There are clear criteria for weighting of examinations specified in the regulations and for marking of examinations. The Panel was provided with evidence of formative feedback to students, this consisted of marks together with brief feedback where work could be improved. The Panel confirmed during interviews that faculty had a reasonable understanding of the purpose of, and use of, formative assessment. Interviews with faculty and students showed that summative feedback is provided within two weeks of work being handed in, though few students indicated that feedback may take considerably longer in some cases. The Panel recommends that the Department should monitor the time taken for feedback to be provided to ensure that it is timely.
- The main research-oriented aspect of the CE programme is the Senior Project. Ethical issues are addressed in the university regulations related to the academic integrity as described in Regulations of Study and Examinations, Regulation of Professional Conduct Violations, and Anti-Plagiarism Policy. The evaluation of research was not addressed in the SER. However, the Panel was able to identify that ethics and principles of research are covered in the module ITCE370, Professional Issues and Ethics.
- The process of pre- and post-moderation and grading of students' work is included in the Study and Examinations Regulations. The Panel was able to confirm that there are appropriate mechanisms for pre-moderation, marking, internal post moderation and external post moderation in place for CE. This process is monitored by the Moderation Committee. However, the Panel noted that internal moderation is not 'blind double marked' and advises the Department of CE to consider the use of 'blind double marking'.
- There are established regulations and processes for addressing academic misconduct and in the case of possible misconduct, the Student Misconduct Committee of the CIT investigates the case and recommends appropriate actions. There is a plagiarism policy (in Arabic) in place. The Panel noted that CE uses Turnitin to detect plagiarism and there is evidence that 25% similarity is used to determine if plagiarism has taken place (See also Indicator 3.2). Provisions for student appeals against examinations, practical work and projects are also covered in the Examination Regulations although the Panel noted during interviews with students that appeals are only possible for the final examinations.

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.

Judgment: Addressed

- UoB has a clear admission policy. The Regulations of Study and Examinations at the University of Bahrain includes admission information. The CE programme has a clear admission policy; however, the Panel notes that there is no clear information about the admission on the college's page at the university's website. The Panel suggests that the CIT admission policy could be made easier to find on the UoB website to ensure better communication to stakeholders. As per the statistics provided in the SER, there is preponderance of male students in admitted student numbers, although without comment under this Sub-indicator (but see also Sub-indicator 2.5). This is a common issue for CE programmes, and the Panel found no evidence of unfairness. The Panel is of the view that the admission policy is applied consistently.
- The SER includes general admission criteria and states that accepted students should be from the science or technical track at their high school for the CE programme, in line with the admission information received later. There is mention of the applicant's high school GPA, entrance examination marks, and an interview in the SER, in overview. Before the visit, a CIT booklet with further details, acceptable, and appropriate evidence admission information was provided, in line with local and international norms.
- Remedial support measures for inadequately prepared students are in place, with initial admission to orientation programme being available before Year 1 of the programme, to improve English (26 hours), mathematics (3 hours), and computer skills (3 hours). Table 2.1-2 in the SER provides numbers of students admitted to orientation in the CE Department at different levels, including 'orientation/foundation'. The proportion for the latter is increasing from a third in 2017 to nearly half in 2019. This issue was discussed with senior management during interviews, though with no specific conclusion. The Panel

suggests that the CE Department investigates the reasons for changes in orientation/foundation student numbers and takes action if appropriate.

- Progression and internal/external credit transfer are described in the SER. Recognition of Prior Learning (RPL) is not mentioned. The Panel confirmed during interviews that RPL is not covered for the CE programme. The Panel is of the view that there are no significant issues.
- Evidence of regular revision of the admission policy was provided, covering admission benchmarking, approval of the recommendations of the standing committee for admissions, and an admissions committee decision. The Panel is satisfied that these demonstrate that a mechanism is in place to revise the admission policy regularly, with evidence provided dating from 2018, 2019, and 2020.

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.

Judgment: Partially Addressed

- With regard to staff recruitment, the Panel was provided with various evidence, including: a formal document (“Decision No 1 for 2006 for Issuing the Bylaws of Faculty Members of the University of Bahrain”) that covers recruitment and appointment, Recruitment Committee Meeting minutes of 2020 and recruitment-related templates. With respect to induction, there is a short document on an Induction Day for new academic staff. The appraisal process is described in the SER, referencing a Faculty Achievements Form 2018/2019 and UoB Evaluation of Faculty Member by the Head of Department. Completed versions of these forms were provided before the visit. Overall, the Panel is satisfied that these provide appropriate evidence. There is a substantial ‘Regulations and Appendices of Academic Promotion at the University of Bahrain’ document. The SER states that the CE Department follows these regulations, Suitable evidence of implementation was provided before the virtual site visit. Consistency and transparency are not mentioned anywhere in the SER for Indicator 2. Additional evidence was provided before the visit including blank forms and a brief overview of consistency and transparency in academic recruitment, induction, appraisal, and promotion. However, the Panel is not convinced that these constitute a sufficient evidence of consistency and transparency. The issue was discussed in interviews with senior management and while no specific concerns were raised, specific procedures covering these aspects were not evident either. Thus, the Panel recommends that UoB should better demonstrate and document its consistency and transparency in academic recruitment, appraisal, and promotion.

- UoB has a clear policy for conducting research titled 'Scientific Research Framework'. In addition, the Panel was provided with a short document on UoB Research Charter, UoB research plan and recent CIT Strategic Plan. The website of the Deanship of Graduate Studies and Scientific Research provides key information about research. The SER states that the Scientific Research Council and University Council ensure the quality of scientific research conducted by faculty members and also the alignment with the research plan of CIT and UoB. The issue was discussed satisfactorily in interviews with senior management. The Panel is of the view that the applied policies and procedures are appropriate and satisfactorily aligned with the UoB's research plan and the CIT strategic plan.
- The SER clarifies that the minimum number of courses assigned to each faculty member at Assistant Professor rank or above is three courses, equivalent to an average of 15 weekly contact hours per faculty each semester. The Panel noted that academic workload varies in each semester. For Semester One 2019–2020, out of 15 faculty, 1 had 2 courses, 9 had 3 courses, 4 had 4 courses, and 1 had 5 courses (normally 3 credit hours per course). Up to two extra load courses are listed too, which could increase the teaching load considerably in practice. In the panel's opinion, this is a high load, even the minimum number is high by international standards for a research-oriented university. There is no detailed information on the special needs of women. Before the site visit, UoB commented that none of the women faculty members in the CE Department has requested maternity leave or baby-sitting support recently. The issue was discussed satisfactorily with senior management during interviews. The Panel is of the view that the teaching load in the CE Department is on the high side. Thus, the Panel advises the College to reduce the teaching load, as this would help to improve time available for research and community engagement activities.
- The SER states that there were 15 full-time faculty members in the CE Department for the academic year 2019–2020. The faculty to student ratio is 22:1 student for each faculty. Thus, the number of faculty should be sufficient for a Bachelor's programme. Brief faculty CVs demonstrate appropriate qualifications and experience in general. There are 12 assistant professors, 3 associate professors, but no full professors in the CE Department. The Panel is of the view that the CE Department faculty have appropriate qualifications and experience for teaching on the CE programme. The Panel suggests that having a full professor and more faculty overall in the CE Department would benefit the programme, particularly in the area of research.
- Professional development is described in the SER, but referenced evidence is lacking. There was a rather an outdated publication showing statistics at College level. It states that scholarly activity can be found in appraisal forms, but samples were not referenced. Workshop information was provided before the visit. Evidence of monitoring and evaluation remained lacking. Professional development provision was discussed with

senior management and faculty members, but with no clear additional evidence. Although no specific issues were raised in practice, the Panel recommends that the monitoring and evaluation of professional development should be more formalized.

- Staff turnover is not mentioned in the SER. Staff retention is described; it is stated in the SER that slight salary increases of up to two steps can be provided to retain highly qualified faculty. Academic staff statistics during 2015 to 2020 was made available before the visit. Although staff leaving and joining dates are not included, it is evident from the stable numbers that staff turnover is unlikely to be an issue, with one faculty change in 2018 during this period. This was confirmed during interviews with faculty members. Research funding is also mentioned, which could help in encouraging retention of research-active staff, although no evidence is referenced. Incentives for remaining at UoB were discussed with faculty during interviews. The low staff turnover indicates that incentives are sufficient at UoB in practice. Overall, the Panel is of the view that there are no significant staff retention issues in the CE Department but suggests that monitoring of staff turnover could be improved, for example with exit interviews and analysis.

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.

Judgment: Addressed

- There is information on laboratory and classroom facilities in the CE Department, dating from 30 April 2018. The information provided is now 2½ years old. Facilities were viewed on a video tour. Before the site visit, CE Department facilities dating from 2018–2019 and an undated laboratory facilities document were provided. The students did not raise specific concerns about classroom and laboratory facilities during the interviews. However, there was some concerns about the consistency of laboratories availability outside formal teaching hours, varying depending on the available staff. The Panel suggests that the availability of laboratories for use outside formal teaching sessions should be more consistent and better communicated.
- As per the SER and the provided evidence, the CE Department has adequate IT facilities that cater for students' needs. These facilities include, 10 laboratories, some of them are equipped to serve specific classes related to Networking technologies, in addition to dedicated working spaces for student groups working on their senior project/IOT lab. It is stated that free Wi-Fi is available for all staff and students from the IT Centre *via* a username/password and that each student is provided with an email account. Students

and faculty did not raise any issues with this during interviews. Overall, the Panel is of the view that the IT equipment in CE laboratories is adequate.

- UoB has a Central Library and a separate Science & IT Library located next to the CIT. A report dated May 2018 provides information on Information Provision issued by the Library & Information Services to the CIT, including information on study places. A previous survey from 2014 is mentioned and book loans during 2015–2017 are covered. Access to the online ACM Digital Library IEEE Xplore Digital Library is mentioned, particularly useful for CE, among many other resources. A spreadsheet provides some brief information about the library, with numbers of printed/electronic books, databases, etc., and web locations of online resources, oriented towards CIT. The Panel is of the view that the library facilities are appropriate with respect to study spaces and accessibility, as noted from the virtual tour.
- As described in the SER, the computing services at the CIT are managed, maintained, and controlled by the IT Centre staff and the department technicians. The technicians at the Department are handling minor technical problems, while major problems are handled by the IT Centre. Maintenance of equipment on warranty is done by the vendors. Although it is stated in the SER that the Department follows the UoB policy which states that PCs replacement and upgrades ‘may’ be done after 3-5 years, the Panel found that the laboratory report includes equipment older than this (2011). The Panel also noted some PCs dating back to 2007. The Panel examined the provided evidence and noticed that some of the CE computer laboratories still run the Windows 7 operating system, released in 2009, although, Windows 10 (available since 2015) is more common nowadays (See recommendation under bullet 4 of this indicator). The software installed on PCs is not detailed, but this is important for a programme like CE. Hence, The Panel recommends that the College should implement the university’s policy of IT equipment replacement more strictly and ensure using the latest version of operating system in all CE laboratories. Concerning measuring the adequacy of the facilities, the Panel examined Figure 2.3-1, which provides 2018-2019 Senior Exit Survey (SES) results concerning facilities, in the form of percentage scores for 14 questions and noted that there is an analysis of results, with quantitative results and reasonably high scores in general. During interviews with administrative staff, examples were provided. However, how formal the mechanism for maintenance is as a direct result of surveys was less clear. The Panel suggests that implementation of improvements from surveys should be better recorded.
- A discussion on health and safety matters is provided. There is a short Security and Safety Procedures document dated 15 February 2018. There is also a longer Laboratory Safety Booklet for students, dated 2019. It is difficult to assess the campus arrangements remotely, but from the information provided, UoB considers health and safety in an appropriate manner. The virtual video tour of laboratories indicated the provision of safety and emergency notices, as did additional video evidence, including the availability

of first aid kits, and photographic evidence of signs. The issue was discussed with administrative staff during interviews and the Panel is satisfied that there is an appropriate health and safety provision at UoB.

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.

Judgment: Addressed

- UoB has a centralised Student Information System (SIS). This is accessible online *via* a password-protected website. Example screenshots of the SIS are provided. Examples of SIS-supported decision making are described in the SER, especially for the Head of Department. A demonstration of the SIS by the CE Department was provided to the Panel remotely during the visit. There were occasional delays in operation, but in general the SIS is generally fit for purpose and impressive in its facilities. The use of the SIS for decision making was discussed with senior management, demonstrating its use. Improvements in the SIS were discussed with the administrative staff. Additional facilities could usefully be added, such as enabling better cohort analysis and monitoring of retention/graduation rates. Overall, the Panel notes that the SIS is a sophisticated decision-making aid at UoB but suggests that additional facilities such as improved cohort analysis would be worthwhile (See also comments under Indicator 3.6).
- As per the SER, laboratory reports are used for decision-making, but only with one very brief example and with no evidence. This was supported with a short Learning Management System (LMS) Report from the UoB eLearning Center for Semester one, 2019–2020. Before the visit, three completed sample reports were provided, two dating from 2019, one undated, and all without signature. Tracking reports on the utilization of laboratories, e-learning facilities, etc., were discussed with senior management, providing additional evidence of reporting for those in management positions, such as the CIT Dean and Head of the CE Department. Overall, the Panel is of the view that reporting is in place, but could be improved with regard to completeness such as dates and signatures for responsibility.
- The UoB 'Information Technology Centre Cyber Policies & Procedures' dates from 17 March 2019, with no revision date, along with other associated documents, including procedures regarding requests for revising examination results, were provided to the Panel. The Panel examined these evidences and found that IT security is covered, but there is no explicit mention of accuracy, although it can be argued that security leads to accuracy. The Panel learned during interviews that the Deanship ensures the security and accuracy of the learners' records, with approval on grades by the Head of Department.

During interviews with faculty, an example of an inaccurate examination result being corrected was discussed, indicating mechanisms in place to help ensure accuracy in practice. Security and accuracy of learners' records was also discussed in interviews with the administrative staff and students, but no specific issues were raised. However, the Panel suggests that UoB should develop a formal procedure to help ensure accuracy of learner' records more explicitly.

- As per the SER, the Directorate of Registration prepares and verifies a student's transcript on graduation, with approval and signature from the CIT Dean and the Dean of Admission and Registration. The Directorate of Admission and Graduate Affairs receives a list of approved graduates and prepares the certificates. The certificates are printed, signed, and stamped by the CIT Dean and the UoB President. A one-page sample graduate certificate is provided. During interviews with administrative staff, the Panel learned that the degree certificates themselves are not available in English, but that instead associated transcripts are available in English, providing appropriately detailed achievements at the individual course level. An English translation of a degree certificate was also provided before the visit, with typical wording for such certificates. The SIS is used during the verification process by advisors and the Head of Department. The SER provides a detailed description of the certification process, but it is unclear which policy/procedure is being followed. A 2-page document in Arabic on the procedures for graduation certification issuance was provided before the visit. The Panel assesses that these are standard procedures for preparing certificate and transcripts. The timeliness is not covered in the SER, but during interviews with administrative personnel, the Panel was reassured that this is not an issue in practice. However, the Panel suggests that timeliness should be more explicitly specified in the certificate/transcript preparation procedures.

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.

Judgment: Partially Addressed

- There are descriptions of facilities for student support, including references to much supporting material: library report; laboratories; e-learning (see Indicator 2.4, e-Learning Centre); e-resources (*via* the UoB Blackboard website, Microsoft Teams, library and SIS); induction; the Psychological Guidance Division booklet; Careers Day booklet. The most recent Careers Day booklet was requested, but a 2015 booklet was provided. During interviews, CE students were not aware of all the support facilities available to them. The Panel recommends that UoB should publish the available student support documents more effectively to students.

- UoB has a Career Counselling Office, providing help with careers, writing CVs, etc. There is a substantial 'Careers Day 17' booklet for March 2017, for an event organized by this office. It is unclear if subsequent similar events have occurred annually, although it is described as an annual event. During interviews, CE students were not fully aware of careers advice facilities available to them. (see also recommendation in the previous bullet)
- There is an Induction Day at the start of the academic year for new students, organized by the Deanship of Student Affairs, through the Department of Advice and Guidance, with associated Induction Day material. Before the visit, a substantial PowerPoint presentation and CIT booklet were provided. A shorter set of slides entitled "How to have a Successful Academic Journey?", dated 18 September 2019 is also provided. A short Induction Day timetable is available. During interviews, students confirmed that they received induction by UoB/CIT at the start of their studies. Overall, the Panel assesses induction for most students to be appropriate. However, transferred students are not specifically mentioned in any of the documentation provided. They receive information like any other student. The Panel recommends that UoB should introduce additional induction information to transferred students, relevant to their needs.
- A screenshot of sample three-line advisor email is provided, together with the UoB Academic Advising Regulations, dated 2013. A blank 'Advisor opinion' screenshot on the SIS is also provided, together with a similar screen showing a two-line advisor opinion. An SIS screenshot with required and passed credit hours for a CE example with credit hours completed is also provided. There are quantitative survey results with respect to questions on academic advising in 2019. However, the results are different from the results in Figure 2.5-1 'CE 18/19 SES Results – advising'. Additional relevant SIS screenshots were provided before the visit. Academic advising was discussed with faculty and students during interviews. Students appreciated the availability and helpfulness of advisers in general. While advising in CIT is implemented, and a Senior Exit Survey is undertaken, their support of the graduate attributes and learning outcomes, and improvements made, are less tangible. Therefore, the Panel suggests that minimum academic advising contact could be increased.
- The SER does not explicitly mention equal opportunities for male or female students. It is stated that the student's advisor coordinates with the Disability Division of the Students' Services and Development Department to ensure full support for students with special needs. There is a mention of special transportation arrangements. An extremely long and not very accessible web link provides access to 'Services and facilities provided by Deanship of Student Affairs for special needs group on the university website'. Searching for 'special needs' on the UoB website gives access to an additional web page resource on 'Career Counselling for Special Needs Students'. Overall, the Panel is of the view that facilities are adequate.

- The SER states that at-risk students are identified, although it is not clarified how, and notifications to visit their advisors are sent *via* the SIS. An SIS screenshot for students with an 'Academic Status' of 'Under Probation' is provided. Timeliness of intervention is not explicitly covered, but the facilities of the SIS and interviews provided reassurance on this in practice. Additional evidence was provided, including a set of CIT PowerPoint slides dated 2017 on 'A procedure to Support Students at Risk', a 2017–2018 action plan and relevant spreadsheets of students; the issue was discussed satisfactorily during faculty interviews. The identification of at-risk students in a timely manner was discussed with administrative staff in one of the main interviews and during a call-back interview. At-risk students are identified by academic advisors rather than administrative staff. Responsibility is split between academic advisors and UoB student support services, depending on whether the issue is purely academic or if it is non-academic. While there is no evidence of significant issues in practice, with the SIS providing good monitoring facilities, recent formal monitoring of timeliness is less evident. Although no issues were observed, the Panel recommends that UoB/CIT should implement a more formal procedure regarding ensuring the timeliness of response to at-risk students. A Psychological Division (aka Psychological Counselling Division on the UoB website) is mentioned, providing additional assistance for at-risk students. There is a web link for online information about the Division. The Panel assesses this provision as appropriate.
- Student support assessment is not explicitly mentioned in the SER. However, further evidence on student support assessment was provided to the Panel, including, minutes of a 2019 PSAC meeting discussing student advising, although without evidence of any action being taken, and examples of improvements such as a new CIT student lounge and a new IoT laboratory, although the latter is not an administrative support service. Improvements in student support were also discussed with administrative staff. An improvement in IT services was given as one example but further examples were lacking. Although there is evidence of some improvements in student support, effective formal mechanisms for the implementation of improvements are less apparent. During interviews with administrative staff, an annual survey of students covering each area of student support was discussed. However, there is no process to evaluate the success of improvements. An example of an improvement, although not necessarily as a result of the annual survey, was provided in the planned move from personal to online registration of students for bus services. Overall, the Panel recommends that the College should better formalize the mechanism for evaluating the effectiveness of improvements made to student support by keeping a records/register of improvements made across all student support services provided at UoB.

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.

Judgment: Addressed

- UoB has well-established assessment policies available in the 'Regulations of Study and Examinations' document that was published in 2013. The students' performance evaluation policy is detailed in chapter three, section one. The SER indicates that assessment in the CE programme includes a variety of assessment methods, which involve both summative and formative methods. Summative assessment includes examinations, quizzes, projects, practical examinations, etc., Samples of final examinations and samples of feedback were provided to the Panel as an example of formative assessment. The Panel noted during the interview with faculty members that formative assessment has been used in several courses. Hence, the Panel is of the view that the complexity of the assessment is appropriate and depends on the level of the course in the CE curriculum.
- The CE department has adopted a tool called Course Assessment Report (CAR) in which the ILOs of each course are mapped to different summative tools, like examination questions, assignments, laboratory exercises, etc. Each CILO is mapped by the instructor of the course to a set of tools. Based on the scrutiny of the CAR, the Panel noted that each of the mapped tools contributes with equal weight to the achievement of the CILO regardless of the degree of relevance of the tool to the CILO being measured. The SER does not discuss the appropriateness of adopting equal weights for every tool contributing towards the measurement of a CILO. Hence, the Panel suggests that the CE Department revises the CAR system to incorporate proportional weights of the tools contributing to the measurement of the CILOs based on relevance. The CE programme has a moderation system of assessment and examinations in place that consists of three types, namely the internal pre-moderation, internal post-moderation and external moderation. These moderations, as confirmed during interview with faculty members, provide feedback on the appropriateness of measuring tools of CILOs.

- Each PILO is aligned to a set of CILOs in the individual courses in the CE curriculum. Such CILOs to PILOs mapping is documented in the course syllabi. In addition, the PILOs are assessed using Performance Indicators (PIs) in a two-year assessment cycle that is monitored by the University's Quality Assurance & Accreditation Centre (QAAC). Each PILO is deconstructed into more specific PI statements. These PIs classify the achievements of the students into four categories: Exemplary, Satisfactory, Developing, and Unsatisfactory. The PIs are measured by faculty through embedding questions in the examinations as indicated by the SER and supporting evidence. The PILOs of the CE programme are appropriately aligned to the PEOs. Therefore, the Panel is satisfied with the mechanisms followed to ensure that the graduates' achievements meet the PILOs.
- The PIAC and the PSAC provide feedback on the CE programme in their annual meetings. This feedback, a summary of surveys, and outcome assessment lead to a set of actions to improve the CE programme. At the course level, individual faculty members analyse the collected data from the assessment tools and document this information in a course portfolio. The Panel was informed in interviews that the College Accreditation Committee (CAC) reviews the course portfolios to ensure the consistency, level and quality of assessment. The Panel is of the view that the CAC reviews and stakeholders' feedback are suitable mechanisms for monitoring the implementation and improvement of the assessment process.

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).

Judgment: Partially Addressed

- The CE Department follows the university regulations related to the academic integrity as described in Regulations of Study and Examinations, Regulation of Professional Conduct Violations, and Anti-Plagiarism Policy. A College Student Misconduct Committee follows up with students' academic misconducts, cheating, and plagiarism cases. Moreover, the Bylaw of Faculty Members describes the academic disciplinary system and disciplinary actions of the University and are published in the Academic and Administrative Bylaws. During interviews with students and faculty members, it was clear that the students and faculty members are aware of the academic misconduct regulations and processes. The Panel is of the view that the policies and bylaws are well-disseminated and known by the academic staff and students.
- The antiplagiarism policy is published on the university website. The faculty members of the CE programme ask students to submit their work through the available plagiarism

detection tools such as Turnitin and Blackboard (SafeAssign) to detect plagiarism in written submitted assignments and reports. The Panel noted, during interviews with faculty members, that the antiplagiarism policy is consistently applied by them. A sample similarity report of a submitted senior project report is included as evidence. As per the SER and from different interviews, the Panel learned that a similarity of 25% is accepted by the College and a percentage beyond 25% will result in zero mark for a submitted report, or assignment. However, no justification was provided on the selection of 25% threshold. Therefore, the Panel recommends that the College should devise an appropriate mechanism to ensure that a student's completed work is his/her own and reconsider the acceptable similarity percentage.

- As per the SER and as elaborated during interviews, the academic misconduct cases are forwarded to the Student Misconduct Committee, which issues the appropriate recommendations of actions to be taken regarding such cases. The Department has detected misconduct cases, such as cheating in quizzes and in final practical test, and actions toward the detected misconduct cases were recommended. During the interview with faculty members, the Panel was informed that the detected misconduct cases by the Department are investigated and recorded later by the misconduct committee. The Panel noted during the interview with the senior management and faculty members that the CIT has a procedure in place to investigate incidents of academic misconduct; however, no evidence was provided to show that academic misconduct cases are recorded. Hence, the Panel recommends that CIT should keep a record of such cases and the actions taken.

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.

Judgment: Partially Addressed

- The CE department claims in the SER that it has a moderation procedure in place that includes three levels of moderation, namely Internal Pre-Moderation, Internal Post-Moderation and External Moderation. The Department has created a course rolling plan to manage the moderation levels and frequency of moderation for the courses. The internal moderator reviews the examination questions and key answers to ensure the appropriateness of assessment tasks before taken by the students. Once the examination is conducted, a post-moderation committee/faculty member reviews samples of marked students' answers. The course rolling plan specifies the courses that will be moderated, related assessment tasks chosen for moderation and the internal moderator appointed for each course. This was confirmed during interview with faculty members and senior management. During the interview with the DAC members, the Panel was informed that an expert faculty is selected as an internal moderator for the courses with which he/she

has experience in teaching the course. As per the SER and as confirmed during interviews, internal moderators are appointed by a Moderation Committee and approved by the Head of Department.

- The Department's moderation committee is tasked to study and analyse the moderation forms submitted by the internal moderators. The fairness of grading is also investigated by the committee. Based on this analysis, the moderation committee creates an improvement plan called Moderation Audit Plan. The Panel examined two Moderation Audit Plans for 2018-2019 and 2019-2020 and found that they present some improvement recommendations, for instance, the mapping between CILOs and questions of the examinations, length of the examinations, and the use of a clear marking scheme. Therefore, the Panel is satisfied that the internal moderation ensures consistent assessment and fairness of grading, and to the improvement of assessment.
- The CE Department claims that the moderation committee at the Department analyses the semester's moderation activities and creates an improvement plan accordingly. Samples of moderation forms were provided. However, the SER did not discuss any mechanism to evaluate the effectiveness of the CE programme's internal moderation (See also recommendation under bullet 6 of this indicator).
- UoB has a procedure in place for external moderation, which details the process of conducting the external moderation and the criteria for the selection of external moderators. The Panel is satisfied that the moderation policy and procedure are appropriate. During interviews with the external moderators, the Panel learned that external moderators review the received examination documents such as a syllabus, model answer, the examination questions and samples of marked answers, then, fill in the External Moderation Form, which includes different aspects such as: the clarity of assessment, appropriateness of assessment level, fairness of marking, suitability of feedback, etc. During the interview with the external moderators, the Panel noted that both external moderators have previous affiliation with the CIT. Therefore, the Panel recommends that CE Department should evaluate the selection of external moderators to better ensure the impartiality of external moderation, and based on this, improve its external moderation procedure.
- The programme was improved several times in the past because of programme review visits. Namely, after a visit by an ABET external expert from the American University of Beirut in February 2020; then, after the ABET accreditation visits in 2010 and 2014; then, after a national review by BQA in 2013; lastly, in 2015 a programme revision that placed the CE programme on the NQF. However, the SER kept silent on the contribution of external moderation to the improvement of courses. The course rolling plan includes a schedule for external moderation for courses; however, only the 2020-2021 plan was provided to the Panel, which was not implemented due to COVID-19. Therefore, the Panel

recommends that the CE Department should develop a mechanism to evaluate the contribution of external moderation to the improvement of courses and to ensure continuous implementation of external moderation.

- As per the SER, the CIT plans to arrange for implementing official external moderation based on a memorandum of understanding between the UoB and other universities within the region. However, no evidence of such plan was provided to the Panel. Moreover, no study was found in the submitted SER or the supporting evidence to show how the effectiveness of the external moderation is ensured. Therefore, the Panel recommends that the CE Department should develop a mechanism to evaluate the effectiveness of internal and external moderation.

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.

Judgment: Addressed

- The CE programme has a one-credit mandatory internship course (Industrial Training – ITCE 490). The ITCS 490 is taken by students during the Summer term between the third and fourth year; that is after finishing 85 credits. The procedure for students’ internship work is summarized in the Industrial Training Guidelines. A student is placed in one company or governmental entity with the help of the Professional Training Division at UoB to work full time for two months. To ensure equivalent work experience amongst internship students, the Professional Training Division confirms the suitability of the hosting entity before placing the students; moreover, the CE Department assigns an academic supervisor to monitor the work of the students. The Panel is satisfied that the training procedure stated in the Industrial Training Guidelines is appropriate.
- The roles and responsibilities of the individuals involved in the industrial training were clearly presented in the Industrial Training Guidelines. The Panel noted from the interviews with the employers and senior students that the training guidelines are well-disseminated to them.
- As per the SER and the Industrial Training – ITCE490 course syllabus, and as confirmed during interviews, students are evaluated based on two main components: their work at the internship provider site by the site supervisor and the submitted report at the end of the internship programme. The ITCS490 syllabus clearly maps the assessment of these components to the PILOs. The Panel is of the view that the industrial training contributes to the achievement of PILOs.

- The Internship students are evaluated through multiple assessment tools, namely academic supervisor visit with a weight of 15%, on-site supervisor assessment with a weight of 40%, and the submitted report with a weight of 45%. The Panel is satisfied with the breakdown of the weights of the assessment tools. During the interview with the employers, the Panel noted that internship students are assessed by the on-site supervisors based on a set of criteria that evaluate students' abilities of analysis, design, implementation, teamwork, professional practice, ethics, communication and punctuality. These criteria are prepared by UoB; therefore, the Panel is of the view that the internship assessment is consistently applied and appropriate in terms of content and level to all students. During the interview with the employers, the Panel noted that the type of tasks given to students in their internship are limited in complexity and size due to the short period of the training, which is two months. Therefore, the panel suggests that the CIT studies consider the option of providing a longer internship period.
- The CE Department claims, in the SER, that most students earn A or A- grades in the Industrial Training course. Based on the Student Exit Survey, 75% of the students are satisfied with the training. However, the SER does not discuss any mechanism to ensure the effectiveness of the training to improve the work placements or whether the students achieve the programme objectives. This was confirmed by the Panel during interviews. Hence, the Panel recommends that the CIT should develop a mechanism to evaluate the effectiveness of training to improve the work placement.

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.

Judgment: *Partially Addressed*

- The Senior Project course (ITCE 497) is a three-credit course registered by students after completing 85 credits. The Senior Project course is a one-semester course and is placed in semester 7 (First semester of the fourth year) in the CE study plan. The CILOs of ITCE497 are clearly mapped to the PILOs as indicated by the course syllabus.
- The responsibilities of senior project committee, supervisors and students are summarized in section 3 of a booklet titled Guidelines for the Senior Project. The SER indicates that the booklet is disseminated during a senior project seminar at the beginning of a semester to all registered students in the course and faculty members. This was confirmed during interviews with faculty and students. The Panel is satisfied that the Guidelines for the

Senior Project booklet contains sufficient information regarding the senior projects and is well-disseminated.

- During interviews with faculty members, the Panel confirmed that supervisors revise and approve all submitted documents by the students and are available for guiding students in implementing the project specifications. Faculty explained that supervisors are required to submit one progress report in the middle of the semester indicating his/her assessment of the students. However, there is no formal mechanism in place to monitor the students' progress in the senior projects. Hence, the Panel recommends that the CE should devise a mechanism to ensure a regular, and more frequent, monitoring and review of the progress of the students in the senior projects course.
- Several parties take part of the assessment process of the different components of the senior projects: the supervisor and the internal and external examiners; however, the supervisor contributes with the highest weight of the total assessment score. The distribution of weights is indicated in the course syllabus. The Panel is satisfied with the weight distribution of the different components of the senior project assessment as depicted in the course syllabus. The SER claims that the Department has an implemented assessment mechanism to evaluate the students' work from the academic viewpoint and industrial viewpoint; however, no written documentation was provided. Hence, the Panel suggests that clear documentation of such assessment mechanisms be published and disseminated to stakeholders.
- An assessment procedure is in place for senior projects. A summary of assessment of four semesters was provided to the Panel, which includes the average achievement of each of the PILOs from the senior project course. However, the SER kept silent on how senior project results are used to improve the monitoring process. This was also not clear during interviews. Hence, the Panel recommends that the CE Department should develop a mechanism to ensure senior projects results used to improve the monitoring process.

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.

Judgment: Addressed

- The SER clarifies that the CE programme uses the direct assessment of the PILOs as an indication that the students have the necessary attributes to enable them to achieve the PEOs upon graduation. The assessment of PILOs is based on the measurement of CILOs of the different courses, while the CILOs are measured based on the students' marks in the courses. A sample of such assessment was provided to the Panel. Moreover, PILOs are

assessed through measuring the performance indicators (PIs); a sample of such assessment is shown. Having reviewed student work and based on interviews with the senior management and faculty members, the Panel is of the view that the students' work in the senior design projects and in the industrial training reflect the ability of the students to create and innovate.

- The number of admitted students has increased from 182 students in the academic year 2016-2017 to 194 students in the academic year 2018-2019 and the number of graduated students is following a similar trend. The provided statistics, such as admitted, enrolled, dismissed, transferred, and graduated, were taken at three snapshots. The Panel notes with concern the high percentage of dismissed or under probation students, and the drop in the number of admitted students. The latest snapshot of the academic year 2018-2019 in the SER shows that 68% (169 out of 247) of the students are dismissed or under probation. During the interview with the management team, the Panel was informed that the reason behind the high percentage of dismissed or under probation students is the introduction of a new procedure (Resolution No. (625/2018) in the Regulations of Study and Examinations at UoB) that was applied on admitted students starting 2017-2018 onwards. However, there was no tracking of the admitted batches of students in terms of the graduation percentage, retention, transferred, length of study and dismissed of every batch of students. Hence, the Panel recommends that UoB should enhance the SIS to perform cohort analysis.
- The CIT tracks the student progression and graduate destination through surveys that are conducted every three to four years. A Graduate Destination survey conducted by the College in 2019 on a sample of 15 graduates shows that 66% of them are employed. The Panel notes that the sample of 15 graduates is relatively small to make any reliable conclusions; hence, the Panel suggests that the CIT should consider running its surveys on a bigger and hence more representative sample of graduates.
- The Employer survey shows that 83-85% of the CE employers are satisfied with CE PEOs, which in turn indicate an employer satisfaction of the graduates' profile. These surveys also show that PILOs of the CE programme are achieved according to the responses of the employers. On the other hand, the alumni survey shows that the CE graduates believe that the PEOs have been achieved by 76-82%. During the interview with the employers, the Panel noted the satisfaction of employers with the CE graduates. Satisfaction of alumni was also apparent during interviews.

Standard 4

Effectiveness of Quality Management and Assurance Academic Standards of Students and Graduates

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.

Judgment: Addressed

- Quality assurance processes for the CIT are defined in the UoB Quality Manual, Quality Assurance and Enhancement Policy, and Programme Quality Assurance and Enhancement Policy. The policies are revised every four years although the Panel noted that they were last reviewed in 2015. The policies are published on the UoB QAAC web pages. Quality processes are implemented by the Quality Assurance and Accreditation Executive Committee (QAAEC) at an institution level. At the College level, quality processes are implemented by the CAC and defined in the Quality Manual. The Panel was able to confirm that the processes are appropriate for the CE programme, regularly revised, and communicated to stakeholders.
- Quality assurance in CIT is managed by the CAC whose members are the DAC Chairs of the College Departments and the Director for the Quality Assurance Office in the College with the remit to monitor quality assurance activities within CIT, including compliance, assessment, and accreditation activities. The Director of the College Quality Assurance Office is also a member in the QAAEC. In the Department of CE quality assurance is managed by the DAC with input from the PIAC and PSAC. The functioning of PIAC and PSAC are considered further in Indicators and 4.4 and 4.5. The DAC is responsible for quality assurance within the Department including programme continuous improvement. The Panel confirmed during interviews that there is a clear quality assurance process for the programme which is well understood and consistently implemented.
- Terms of reference, membership, and meeting frequency of CIT and CE committee meetings are defined at the institutional level. The College Quality Assurance Office and DAC monitors the consistent implementation of policies and procedures and the CE operational plan which is a plan of annual quality assurance processes to be undertaken by the Department. The DAC combines results of surveys and programme data into an

Annual Programme Self Evaluation Report which incorporates analysis, discussion and actions based on feedback. It was confirmed during interviews that the quality assurance procedures are implemented with an annual audit of the course portfolio and analysis of stakeholder surveys. The Panel is satisfied that there are mechanisms in place to ensure consistent implementation of quality assurance procedures within CIT and DCE.

- The CIT Quality Assurance Office conducts capacity building and awareness training events for academic and support staff. The Panel confirmed during interviews that staff have a good understanding of the quality assurance processes and their role in ensuring the effectiveness of provision.
- QAAC conducted an internal review of the CIT quality assurance management system which focused on three areas: college performance, evaluation of academic programmes, evaluation of the effectiveness of quality management. CIT met all the three standards with a recommendation to update market studies to identify annual initiatives to meet the objectives of the College. This recommendation has been completed. The Panel learned from interviews that this system was introduced in 2018 and the Panel noted that there is no periodic schedule of review for CE. This issue is considered further in Indicator 4.3.

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.

Judgment: Addressed

- The CE programme leadership includes the Dean of the College, Director of Quality Assurance Office, Chairperson of the Department, and the departmental committees. The Chair of the Department plus another senior member are representatives in the College Council, which is chaired by the Dean. The Department Council is chaired by the Department Chair and includes in its membership all CE faculty members. The Department of CE has eight committees responsible for aspects of the Departments' operation, for example, quality assurance, curriculum and student affairs. There are good formal communication links and the Panel found that the UoB organisation structure is appropriate for the management of the programme. However, a formal organisation chart was not available and so the Panel advises the CIT to develop a formal organisation chart.
- Existing reporting lines for the management of quality assurance at the institution, college and department level are defined and clear. The Panel confirmed that generally, ownership of responsibility and reporting lines are clear; however, during interviews, there was some divergence about who has responsibility for committee decisions – the

Department Council or DAC. The Panel noted the introduction of a Correspondence Management System which aims to ensure effective communication.

- There are clear terms of reference for the management posts and committees in UoB at an institution level, within the CIT and within the Department of CE. These posts for the CIT are the Dean of College, Director of Quality Assurance Office and Chairperson of the CE Department. Committees include the College Council, Department Council, Quality Assurance Executive Committee, PIAC, PSAC and DAC.
- There is a clear description of the function of committees and management roles at each level within the Institution to assure the academic standards of the programme. The roles and responsibilities of those involved in developing and delivering the programme are clearly identified. From interviews, the Panel found that there is a good understanding amongst the faculty of their role to assure the quality of the programme.
- The Panel found clear reporting lines that support communication and decision-making across the College. In addition, the programme management is supported by different departmental committees, which report to the Department Council each semester. The responsibilities of each committee, as indicated previously, are clear and demonstrate appropriate division of responsibilities. Therefore, the Panel is of the view that the current programme management within the Department is appropriate.

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.

Judgment: *Partially Addressed*

- The Department of CE presented evidence showing that there is a comprehensive annual self-evaluation report for the CE programme. The Report includes the profile of the programme, students, faculty, research, course statistics and feedback from a range of stakeholders. There is analysis and discussion related to each element of the report and an 'opportunities for improvement' section identifying recommendations to be taken forward. The Panel appreciates the reporting of course/programme statistics is linked to PILO achievement. The Panel noted errors in statistical data, in particular the Annual Self-Evaluation Report of the AY 2018-2019 Table 5, which shows a pass rate of 70% in every course. The retention rate, in Table 3 of the SER, is not shown in the Annual Self-Evaluation Reports. Students dismissed, under probation or cancelling admission is a significant proportion of each cohort, though no action has been identified in the Annual Self-Evaluation Report to address it. The Panel noted that there is no 'owner' of actions

identified, nor are previous years' actions reviewed in the SER (See also under the next bullet).

- The Department of CE provided evidence of identifying actions (opportunities for improvement) and there was evidence of some of these actions being implemented. However, this did not demonstrate that the Department formally monitors actions identified to ensure their implementation nor a formal mechanism to evaluate the impact of actions identified by and subsequently followed up by the PIAC and PSAC. This was also confirmed during interviews. The Panel recommends that the Department of CE should review the process for monitoring, review and evaluation of the effects of implementation of actions identified in the annual Self-evaluation Report.
- UoB specifies the requirement for periodic programme reviews in the Programme Quality Assurance and Enhancement Policy and a timetable of reviews across the College. In addition, the CE has chosen to apply for external accreditation by ABET and IEEE, which requires being subject to a periodic review. The requirements for inclusion in the periodic review are specified in the Regulations for Offering and Developing Programmes. Evidence provided demonstrates a schedule for the first internal review of programmes including CE. During interviews with senior management, the Panel learned that further review would take place if a programme is deemed to be weak or if a department requests a review, but no regular planned internal review of the CE programme. The Panel therefore recommends that UoB extends the recently introduced internal periodic review process to ensure that there is a regular internal periodic review of CIT and CE.
- Periodic reviews requirements for programmes at UoB are specified in the Regulations for Offering and Developing Programmes and include feedback from internal and external stakeholders. The Panel noted that the review process has recently been introduced and so it is not possible to find evidence of an embedded regular review of the CE programme. The Panel did, however, find that the periodic review report was thorough, identifying a number of commendations and a few recommendations including, to update market studies to support the identification of annual objectives and to develop an annual department action plan. The review report did not show evidence of feedback from stakeholders and the Panel recommends that UoB should further develop the periodic review reporting to incorporate stakeholder feedback.
- The Internal Quality Review (IRQ) policy includes a procedure for the implementation of periodic reviews. This includes the QAAC identifying a schedule of programmes for review; formation of a review panel; relevant departments supplying supporting materials; and following up the review: the preparation of a review report; Department preparation of an improvement plan; and the Quality Assurance Office Director monitoring implementation of the improvement plan. The Panel noted that there are mechanisms within the IRQ policy to ensure proper implementation of the periodic

reviews and improvement plans. The IRQ policy was introduced in AY 2018-2019 and the CE programme is scheduled to be reviewed next academic year; therefore, the Panel did not find evidence of a programme review, improvement plan or monitoring of the improvement plan. The Panel advises that the CIT formalises the monitoring approach for improvement plans defined in the Internal Quality Review Policy.

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.

Judgment: Partially Addressed

- UoB has a benchmarking policy which applies to all benchmarking activities. The CE Department conducted a benchmarking of the CE programme in 2018 as part of a periodic review. The benchmarking included a comparison between credit hours in/of the CE programme and IEEE or ABET standards in specific subject categories. It also included a mapping of course subjects in the CE programme with those on IEEE standards. The CE Department also benchmarked the courses of the CE programme with those of equivalent programmes at seven regional and international universities. The benchmarking did not consider aspects other than curriculum content. The Panel recommends that the College should conduct a more comprehensive benchmarking exercise of the programme, covering different aspects and components of the academic and administrative activities and services it provides.
- The CE curriculum review highlighted differences in curriculum content and credit hours on programme topics between institutions and between CE and IEEE/ABET. The outcome of the review was a redesign of the programme to change some of the content, revise courses where overlap or similarities were identified and give greater or lesser emphasis to some content. The revised programme was revalidated as specified by the UoB Regulations for Offering and Developing Programmes. It was therefore evidenced that the results of benchmarking were used to inform the curriculum development.
- UoB has an operational plan, which is an annual calendar of quality audit events to be completed. This includes dates for annual collection and analysis of an alumni survey, an employer survey, a senior exit survey and a faculty survey to be conducted by Departments. However, evidence provided demonstrates that the employer and alumni surveys are conducted every two years. In addition, a courses evaluation survey is conducted by QAAC with results published on the SIS. A university experience survey is also conducted, collecting and analysing data on students' experience of services and

infrastructure. The Panel is satisfied that there are formal mechanisms for collecting stakeholder comments.

- The Department of CE claims that the results of surveys are analysed to identify improvement plans. The Panel found evidence of analysis of surveys in reports. Further evidence was provided of responding to a PIAC survey contributing to the redesign of the CE programme. Thus, the Panel is satisfied that collected comments are feeding into decision making.
- The Panel found evidence of actions being identified, in survey analysis reports, and of actions being collected into an action plan. The Department of CE claims that the DAC monitors implementation of the improvement plan; however, there was no evidence of formal monitoring of actions nor evaluating the impact of changes implemented. This was also confirmed during interviews. Hence, the Panel recommends that the Department should implement formal processes, following survey analysis and action identification to monitor implementation and evaluate the effectiveness of changes implemented and to communicate these results to stakeholders. For example, students identified assignment overload as an issue which resulted in an action on 'Instructors' with no follow up. The faculty explained to the Panel during interviews that the analyses of surveys are made available to stakeholders through the SIS. Furthermore, the SER claims that actions are communicated to stakeholders through the PIAC and the PSAC; however, evidence provided and interviews with different stakeholders do not demonstrate feedback to stakeholders of actions taken nor improvements noted as a result of actions taken.
- The Panel was not provided evidence that stakeholders are satisfied with changes made. Furthermore, during interviews, it was not clear that stakeholders are informed of improvements made based on their feedback (See the recommendation in the above bullet).

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.

Judgment: Addressed

- There is a functioning programme advisory board, the PIAC, which has clear terms of reference and includes 19 employers and alumni. The Panel noted evidence of PIAC meetings since AY 2017-2018. The Quality Manual indicates that most PIACs meet twice per year; however, the Panel noted from interviews and evidence that in the Department

of CE the PIAC and PSAC meet once per year. The Panel advises CIT to ensure that PIAC-PSAC meets every year in line with Quality Manual guidance.

- The feedback from the PIAC is used to feed into the Department SER Improvement Plan. This includes, for example, suggestions about the skills required of graduates, suggested changes to core and elective courses. As indicated in 4.4 the Panel did not find evidence of how recommendations made are monitored for implementation nor how feedback is provided to stakeholders.
- The PIAC members were surveyed as part of the curriculum review and input led to changes in the programme. There are also regular alumni surveys. The Panel noted that surveys of alumni identified that 45% of graduates from CE have not found graduate employment. The Panel also noted that graduate employment statistics do not appear in the CE annual Self-evaluation Report. This issue is referred to in Indicator 2.4 and 3.6. Accordingly, the Panel suggests that graduate employment is included in the annual Self-evaluation Report to support improvements in the programme to meet the labour market needs. In addition, the Department has conducted a market analysis, to help develop the programme and ensure it meets the needs of employers. Accordingly, the Panel is satisfied that there are mechanisms in place for ensuring that the programme meets the labour market, national and societal needs.
- The CIT presented evidence of a formal market survey to identify IT skills and CE skills needed in the market. The survey was completed in early 2020. The survey focused on an assessment of skills needed for CE graduates. There were 259 respondents to the survey, which, thus, provided a good indication of the labour market needs in the Kingdom of Bahrain. However, the Panel noted that this survey is not conducted regularly. Analysis of the survey results concluded that there is a need in the market for CE graduates, but there was no indication that the results of the survey are used to further influence the programme's design. The Panel was also informed that the results of the survey were to be discussed at PIAC; however, this meeting did not take place until the time of the visit in December 2020. The Panel recommends that CIT should regularly perform a targeted market analysis of the IT sector to provide insight into current and evolving requirements of the labour market and employer needs with respect to CE.
- As indicated previously in this report, the Panel is satisfied that there is a proper mechanism to collect feedback from various stakeholders to inform decision making. Also, there is evidence of actions being identified, in survey analysis reports, and of actions being collected into an action plan. However, there was no evidence of formal monitoring of actions nor evaluating the impact of changes implemented (See recommendation under bullet 5 of 4.4).

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 of Science in Computer Engineering of College of Information Technology offered by the University of Bahrain.

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

1. The use of course assessment reports quantitatively, thus demonstrating how a student cohort meets PILOs through the students' course assessment scores and identifying issues with assessments not meeting a CILO together with improvement actions as appropriate
2. The reporting of course/programme statistics is linked to PILO achievement

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

1. Maintain a plan/register for identifying and managing risks related to the quality of the programme, as well as an analysis of these risks and their mitigation
2. Review the PILOs should be to ensure that they reflect the entrepreneurial focus of the College and CE PEOs
3. Implement a formal process to monitor the reading lists, research findings, particularly for year three and four courses, to ensure that these are updated regularly, and that current professional practice are used in the subject
4. Develop a teaching and learning strategy, owned by the Unit for Teaching Excellence and Leadership or CIT, to support the development of current teaching methods for courses and to focus efforts on professional development initiatives for teaching staff
5. Add the use of e-learning to the teaching and learning policy and CIT teaching and learning strategy and embed it as part of teaching and learning practice within the programme
6. Review practical aspects of the course to ensure that the skills being taught are in line with current industry practice
7. Monitor the time taken for feedback to be provided to ensure that it is timely

8. Better demonstrate and document the consistency and transparency of relevant procedures on academic recruitment, appraisal, and promotion
9. Better formalize the monitoring and evaluation of professional development
10. Implement the university's policy of IT equipment replacement more strictly and ensure using the latest version of operating system in all CE laboratories.
11. Publish the available student support documents more effectively to students.
12. Introduce additional induction information to transferred students, relevant to their needs
13. Implement a more formal procedure regarding ensuring the timeliness of response to at-risk students.
14. Better formalize the mechanism for evaluating the effectiveness of improvements made to student support by keeping a records/register of improvements made across all student support services provided at UoB
15. Devise an appropriate mechanism to ensure that a student's completed work is his/her own and reconsider the acceptable similarity percentage
16. Evaluate the selection of external moderators to better ensure the impartiality of external moderation, and based on this, improve its external moderation procedure
17. Develop a mechanism to evaluate the contribution of external moderation to the improvement of courses and to ensure continuous implementation of external moderation
18. Develop a mechanism to evaluate the effectiveness of internal and external moderation
19. Develop a mechanism to evaluate the effectiveness of training to improve the work placement
20. Devise a mechanism to ensure a regular, and more frequent, monitoring and review of the progress of the students in the senior projects course
21. Develop a mechanism to ensure senior projects results used to improve the monitoring process
22. Enhance the SIS to perform cohort analysis.
23. Review the process for monitoring, review and evaluation of the effects of implementation of actions identified in the annual Self-evaluation Report
24. Extend the recently introduced internal periodic review process to ensure that there is a regular internal periodic review of CIT and CE
25. Further develop the periodic review reporting to incorporate stakeholder feedback

26. Conduct a more comprehensive benchmarking exercise of the programme, covering different aspects and components of the academic and administrative activities and services it provides
27. Implement formal processes, following survey analysis and action identification to monitor implementation and evaluate the effectiveness of changes implemented and to communicate these results to stakeholders
28. Regularly perform a targeted market analysis of the IT sector to provide insight into current and evolving requirements of the labour market and employer needs with respect to CE