



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

# **Directorate of Higher Education Reviews Programme Review Report**

**University of Technology Bahrain  
College of Computer Studies  
Bachelor of Science in Computer Science  
Kingdom of Bahrain**

**Site Visit Date: 19 – 20 October 2020**

**Extension Visit Date: 7<sup>th</sup> February 2022**

**HA038-C3-R038**

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## Acronyms

ABET	Accreditation Board for Engineering and Technology
ACM	Association for Computing Machinery
APR	Academic Programme Review
BQA	Education & Training Quality Authority
BSCS	Bachelor of Science in Computer Science
CGPA	Cumulative Grade Point Average
CILO	Course Intended Learning Outcome
CIS	Campus Information System
COC	Curriculum Oversight Committee
CQI	Continuous Quality Improvement
CRC	Curriculum Review Committee
CS	Computer Studies
CSAB	Computer Science Accreditation Board
CV	Curriculum Vitae
DHR	Directorate of Higher Education Reviews
DSA	Deanship of Students Affairs
EDT	Employee Disciplinary Tribunal
FDC	Faculty Development Committee
FDO	Faculty Development Office
FMS	Facilities, Maintenance & Security
GO	Guidance Office
HEC	Higher Education Council
HEI	Higher Education Institution
HR	Human Resources
HRD	Human Resource Department
HRMS	Human Resource Management System

ICT	Information and Communication Technology
IEEE	Institute of Electrical and Electronics Engineering
IFDP	Individual Faculty Development Plan
IILO	Institutional Intended Learning Outcome
IQA	Internal Quality Audit
IRO	Institutional Research Office
IT	Information Technology
MIS	Management Information System
NQF	National Qualifications Framework
OOPT	Oxford Online Placement Test
OSS	Office of Student Services
PAST	Performance Appraisal System for Teachers
PC	Personal Computer
PDC	Program Development Committee
PDD	Planning and Development Department
PEO	Programme Educational Objectives
PH	Programme Head
PIAP	Programme Industry Advisory Panel
PILO	Programme Intended Learning Outcome
PLAO	Placement, Linkages and Alumni Office
QA	Quality Assurance
QAAD	Quality Assurance and Accreditation Department
QMS	Quality Management System
RC	Research Centre
RMP	Risk Management Plan
RMT	Risk Management Team
RPL	Recognition of Prior Learning

SC	Specialization Coordinator
SDT	Student Disciplinary Tribunal
SES	Self-Evaluation Survey
SSS	Student Satisfaction Survey
TLA	Teaching, Learning and Assessment
ToR	Terms of Reference
ToS	Table of Specifications
UTB	University of Technology Bahrain
VPAA	Vice President for Academic Affairs
WBL	Work Based Learning

## I. Introduction

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

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

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

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

*Standard 1: The Learning Programme*

*Standard 2: Efficiency of the Programme*

*Standard 3: Academic Standards of Students and Graduates*

*Standard 4: Effectiveness of Quality Management and Assurance*

The Review Panel (hereinafter referred to as 'the Panel') decides whether each indicator, within a standard, is 'addressed', 'partially addressed' or 'not addressed'. From these 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**

<b>Criteria</b>	<b>Judgement</b>
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 <b>Standard 1</b> 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 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 and the extension visit, in relation to the review standards, indicators and their underlying expectations.

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

## II. The Programme's Profile

Institution Name*	University of Technology Bahrain/ Previously AMA International University-Bahrain
College/ Department*	College of Computer Studies
Programme/ Qualification Title*	Bachelor of Science in Computer Science
Qualification Approval Number	-
NQF Level	-
Validity Period on NQF	-
Number of Units*	198
NQF Credit	594
Programme Aims*	<ul style="list-style-type: none"> <li>• Apply knowledge to effectively analyze and assess real life problems to develop economically viable and socially acceptable computing solutions.</li> <li>• Demonstrate excellence in professionalism, moral and ethical conduct, interpersonal skills and adaptable communication to prevalent trends in technology and changing technology.</li> <li>• Work productively as successful computer professionals in diverse career paths including supportive and leadership roles on multidisciplinary teams or be active in higher studies.</li> </ul>
Programme Intended Learning Outcomes*	<ul style="list-style-type: none"> <li>• Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.</li> <li>• Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the programme's discipline.</li> <li>• Communicate effectively in a variety of professional contexts.</li> <li>• Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.</li> </ul>



	<ul style="list-style-type: none"><li>• Function effectively as a member or leader of a team engaged in activities appropriate to the program’s discipline.</li><li>• Apply computer science theory and software development fundamentals to produce computing-based solutions.</li></ul>
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\* Mandatory fields

### III. Judgment Summary

## The Programme's Judgment: Confidence

Standard/ Indicator	Title	Judgement
<b>Standard 1</b>	<b>The Learning Programme</b>	<b>Satisfied</b>
Indicator 1.1	The Academic Planning Framework	Addressed
Indicator 1.2	Graduate Attributes & Intended Learning Outcomes	Addressed
Indicator 1.3	The Curriculum Content	Addressed
Indicator 1.4	Teaching and Learning	Addressed
Indicator 1.5	Assessment Arrangements	Addressed
<b>Standard 2</b>	<b>Efficiency of the Programme</b>	<b>Satisfied</b>
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	Addressed
<b>Standard 3</b>	<b>Academic Standards of Students and Graduates</b>	<b>Satisfied</b>
Indicator 3.1	Efficiency of the Assessment	Addressed
Indicator 3.2	Academic Integrity	Addressed
Indicator 3.3	Internal and External Moderation of Assessment	Partially Addressed
Indicator 3.4	Work-based Learning	Addressed

Indicator 3.5	Capstone Project or Thesis/Dissertation Component	Addressed
Indicator 3.6	Achievements of the Graduates	Addressed
<b>Standard 4</b>	<b>Effectiveness of Quality Management and Assurance</b>	<b>Satisfied</b>
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 Science (BSCS) programme has clear planning processes as shown in the Academic Plan of the College of Computer Studies (CS), risk management plans, and the Strategic Plan of the University of Technology Bahrain (UTB) which was previously known as AMA International University-Bahrain. There are also clear policies related to planning, programme development, review and enhancement, and mapping of qualifications to the National Qualifications Framework (NQF). In addition, there are other policies related to academic standards and Quality Assurance (QA) in place.
- The planning processes and related policies are monitored and implemented, as evidenced by the provided documents, which include the BSCS programme labour market scoping report and samples of the minutes of meetings of the Programme Development Committee (PDC), the Curriculum Oversight Committee (COC), and the Curriculum Review Committee (CRC). The Panel was also provided with a proper mapping of the Programme Intended Learning Outcomes (PILOs) to the Programme Educational Objectives (PEOs).
- There is a comprehensive Risk Management Plan (RMP) which is set by the CS College and relates to the UTB RMP. UTB classifies potential risks into areas of teaching and learning, faculty, research, enrolment, quality assurance, and finance. The risks are monitored by Risk Management Teams (RMT).
- The BSCS programme/qualification's title is concise and indicative of the qualification's type and content, and is accurately reflected on the certificates. The programme is mapped to the NQF level 8 and bears 594 NQF credits; however, the programme is not yet

validated nor placed on the NQF Registry because the Institution is not listed on the NQF. The Panel advises UTB to take the needful actions to fulfil the NQF Institutional Listing and the Programme Placement requirements.

- There are committees responsible for verifying the BSCS programme's conformance to the requirements of the NQF, Higher Education Council (HEC) and the Association for Computing Machinery (ACM)/ Institute of Electrical and Electronics Engineering (IEEE). The PDC is responsible for the design and the mapping of the BSCS programme to the NQF. The CRC confirms the programme mapping to the NQF level 8.
- The aims of the BSCS programme are clearly stated in the PEOs and are aligned with the missions and strategic goals of the CS College and UTB. The PEOs are reviewed every four years by both internal and external stakeholders.

### **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**

- The graduate attributes are clearly stated in the UTB Institutional Intended Learning Outcomes (IILOs) and embedded within the BSCS PILOs. The six BSCS PILOs are exactly the same as those prescribed by the Accreditation Board for Engineering and Technology (ABET) for a Computer Science Bachelor's programme and thus, more suitable for students in the USA. Therefore, the Panel recommends that UTB should revise and rephrase the PILOs in order to distinguish them from those prescribed by ABET, taking into consideration the needs of Bahrain's labour market and society.
- The PILOs are mapped to the PEOs and are appropriate for the type and level of the BSCS programme, which meets the NQF as well as international requirements and norms. The Course Intended Learning Outcomes (CILOs) are also mapped to the PILOs and are appropriate for the level of each course and its contents.
- The course coordinators and faculty members utilize the NQF level descriptors to ensure that PILOs and CILOs are appropriately written and measurable. In the BSCS programme, the CILOs of year one and two, are mapped to NQF level 6 and level 7, respectively; while those of year three and four are mapped to NQF level 8. The evidence provided includes samples of course benchmark reports which show the comparability of the CILOs with local, regional and international courses. The CILOs have also been reviewed and their appropriateness is confirmed by course external examiners. The interviewed faculty members and course coordinators explained these processes during the virtual site visit

interviews. The Panel notes with appreciation the mechanisms employed by UTB to ensure the comparability of the CILOs and their appropriateness to the level of the degree in line with the NQF requirements.

### **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: Addressed**

- The BSCS programme has a study plan organized in 11 trimesters and can be completed in four years with an average load of 18 credit hours per trimester. The Panel finds that the student workload is acceptable. With a minimum load of 12 credit hours per trimester, working students can complete the programme's 198 credit hours in 17 trimesters. As per the SER, the 2017-2018 curriculum allocates 58 credit hours (174 NQF credits) to math and science, 30 credit hours (90 NQF credits) to general education, and 110 credits (330 NQF credits) to professional computing courses.
- Using a sequence of pre-requisites, the curriculum shows appropriate progression of knowledge, skills, and competencies from lower to higher level courses. The Panel notes that the curriculum is organized to provide academic progression of learning complexity guided by the NQF levels and credits. As per the SER, the 2017-2018 curriculum satisfies the NQF requirements with 40% of courses mapped to level 8 of the NQF.
- The curriculum is informally benchmarked with several programmes and has six core areas that are arranged in line with the ACM/IEEE body of knowledge. These are Algorithms and Complexity, Computational Science and Artificial Intelligence, Computer Architecture and Operating System Cluster, Programming Languages and Database, Management System, Software Design and Development Cluster, and Information Security and Networking.
- As per the SER, the curriculum is designed to provide students with appropriate balance between theory and practice, and between knowledge and skills. The Panel notes that major courses have in-course projects and laboratory components as shown in the programme and course specifications. Furthermore, the curriculum has a practicum course (internship), in addition to oriented-based research courses that enable students to apply ideas, concepts, principles, tools and skills gained from their studies for developing a computing-based solution and to demonstrate that in writing and oral presentations. The Panel acknowledges that the curriculum includes in-course projects, two research

courses, and a practicum course, which could help in preparing students for professional careers and further studies in the computing discipline.

- The Panel notes that several committees and external stakeholders were involved in the development and the review of the curriculum including the College Council, CRC, PDC, Programme Industry Advisory Panel (PIAP). As per the virtual site visit interviews, the curriculum contents, with courses such as Software Maintenance and Testing, Information Security Governance, Cloud Computing, E-Commerce Infrastructure and Application, were recently updated based on the PIAP recommendations and labour market studies.
- Course experts/ external examiners ensure the depth and the breadth contents of courses. Course specifications have a list of up-to-date and appropriate textbooks and references, research findings, e-references, library resources and journals; however, the College needs to orient the academic staff on how courses are developed to cover the expected outcomes in terms of depth and breadth. The Panel has a concern that the College did not properly introduce and clarify the depth and breadth knowledge areas in the curriculum to all faculty members. During the virtual site visit interviews, they were not aware of how the contents are structured and mapped to ILOs. Thus, the Panel advises the College to introduce and explain the concepts of depth and breadth in the curriculum to all faculty members, including new ones during orientation activities.

### **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: Addressed**

- UTB has a Teaching, Learning and Assessment (TLA) Policy, which requires faculty members to use a variety of TLA methods that enable students to attain CILOs and PILOs. The TLA Policy requires faculty members to employ pedagogies based on constructivism, inquiry, collaborative and experiential learning approaches. As per the SER and virtual site visit interviews, faculty members use varieties of teaching and learning methods including lectures, group discussions, case studies, problem-solving, simulation, videos clips, presentations, in-class projects, laboratory sessions and research-based activities. This was confirmed to the panel during interviews with faculty and students.
- The teaching and learning methods are listed in the programme and course specifications. The Panel notes that these methods encourage students to integrate computer science theory with software development fundamentals in implementing a system development project including proper documentation in a real-world environment, as it is implemented in courses and capstone projects. There are also few examples that show that faculty

members use recent research findings and current professional practices in some of the new added professional courses in topics such as IoT, cloud computing and web usage. The Panel suggests enhancing the use of research findings in the teaching and learning process.

- The e-learning management system 'MOODLE' is utilized in all courses and helps in promoting student-centred learning. The statistics from the past three years show that MOODLE was fully utilized. Students also utilize software tools including JCreator, NetBeans, Eclipse, Android Studio, Weka, Oracle, and CISCO Packet Tracer to improve their software development and programming skills.
- There are notional hours allocated in the BSCS programme to promote direct learning and independent studies that support students' development of life-long learning skills. The Panel notes that more than 50% of the major courses have laboratory components; and every trimester educational tours and seminars are conducted by representatives from the industry.
- The Panel notes with appreciation that the BSCS students are encouraged to participate in workshops/seminars provided by partners such as IEEE, INJAZ and Huawei to improve their competencies. Students are also encouraged to participate in national and international competitions related to computing and software development such as Imagine Cup, Brinc Batelco and Hackathon to enhance their creativity and innovative skills in developing virtual reality environment, system models or organization tools.
- In order to enhance the students' research capabilities and motivate them to innovate, UTB provides specialized laboratories in computing such as iMac laboratory, Data Communication and Networking laboratory, Oracle laboratory and Open Laboratory. However, there is no emphasis on attaining high level of creation and innovation so as to allow for significant contributions to be made in relation to developing commercial products and patents. Thus, the Panel recommends that UTB should establish an incubator laboratory and implement a policy for academic staff and students' entrepreneurship and innovation to allow for significant contributions.

### **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**

- In addition to the TLA Policy, there are appropriate policies and procedures related to capstone/thesis writing, research ethics and conduct, student academic honesty, and appeal against assessment results. All the TLA related policies and procedures are



adequately disseminated to students and faculty members *via* UTB's Operations Manual and the Student Handbook.

- There are implemented formative and summative assessment methods. The summative assessments include test one, test two, assignments, in-course projects/case studies and final examinations. The course coordinator in consultation with faculty members prepares all summative examinations, which are subjected to internal moderation and external moderation.
- There is a post moderation process conducted internally and externally to ensure fairness and rigour in grading. The process is verified by the Continuous Quality Improvement (CQI) Committee within the College which conducts the periodic Internal Quality Audit (IQA).
- As per the SER and virtual site visit interviews, faculty members provide timely oral feedback after every formative assessment. In summative assessments, faculty members provide oral feedback, whereas written feedback is provided on the test booklets.
- There are provisions for addressing misconduct and appeals by the students. The UTB has an anti-plagiarism software; and it allows up to 20% degree of similarity for students' submitted work. A Student Disciplinary Tribunal (SDT) investigates plagiarism and academic misconduct cases. If there is a plagiarism or academic misconduct case, a penalty is decided according to the policy adopted from the University of Bahrain as required by the HEC.
- A student can submit a grade appeal request to the Office of Student Services (OSS) under the Deanship of students Affairs (DSA). The OSS processes the grade appeal and if it has a valid reason, there will be a review of the assessment document. If it results in a grade change, the concerned faculty member is informed to initiate a grade erratum process and corrects the grade. In all cases, the students will be informed about the result of their appeals. The implementation of these processes was assured to the Panel during the virtual site visit interviews.

## 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

- There are clear policies and procedures pertaining to the admission of students to UTB programmes, students with special needs, Recognition of Prior Learning (RPL), and Credit Transfer. These policies and procedures are published on the institution website and are available in the UTB Catalogue, the Student Handbook and marketing brochures. The Admissions Office, Registration Office, Deanship of Student Affairs and Dean of the CS College participate in implementing these policies and procedures.
- UTB accepts all applicants equally regardless of their gender and nationality based on their secondary/high school Cumulative Grade Point Average (CGPA) with a cut-off score of 60% for Bahraini secondary qualification. Starting from the 2<sup>nd</sup> trimester of the Academic Year 2018-2019, UTB developed an 'admission matrix' that includes equivalent cut-off scores for non-Bahraini qualifications. There are also specific admission cut-off scores for the BSCS programme in Mathematics, Science and English.
- Applicants who achieve the required cut-off scores in IELTS, TOEFL or the English subject in their secondary qualifications are exempted from taking the Oxford Online Placement Test (OOPT) and the English remedial courses. In addition to two remedial courses in English, UTB offers one remedial course in Mathematics, and in the Academic Year 2018-2019 it started offering tutorial classes in basic science.
- As per the SER, a transfer student is required to complete at least 50% of the required credit hours of the BSCS programme in residence at UTB in line with the HEC regulation which specifies a maximum of 66% credit hours that can be transferred from a similar programme offered by another recognized higher education institution.

- The Institutional Research Office (IRO) conducts a periodic study on the effectiveness of the admission policy and the ability of the admitted students to progress in the BSCS programme. The results of the studies indicate a successful performance in the first-year mathematics and English courses of students admitted in the last three academic years.

## **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***

- There are clear policies and procedures pertaining to Human Resources (HR), Faculty Induction, Peer Review and Mentoring, Faculty Workloads, Faculty Professional Development, and Promotion. There is also a Performance Appraisal System for Teachers (PAST) that is conducted every trimester and its results are considered in the promotion of faculty members and their development plans. As per the SER and the virtual site visit interviews, these policies and procedures are implemented and disseminated to faculty members during the induction period and are described in the Faculty Manual.
- UTB Research Centre (RC) and the College Research Committee monitor the research activities to ensure their alignment with the college and institutional research plans. The Panel was provided with samples of faculty members' publications in the UTB's Research Journal and in other refereed journals. There are cases that faculty members were given financial support to present their research in local, national or international conferences, and during the UTB's Annual Research Colloquium. However, the Panel notes that there is a limited number of high-quality research publications conducted by faculty members and hence, limited promotion cases. Thus, the Panel recommends that the UTB should review the effectiveness of its research policy and the support provided to faculty members for their research projects and promotions.
- The Panel notes that faculty members have satisfactory workloads that are in line with HEC regulations, and there are provisions that take into account women's needs in compliance with the Bahrain labour law.
- The Human Resource Department (HRD) is responsible for the process of faculty members' recruitment and ensures that the qualifications of all selected applicants meet HEC's requirements. As per the SER, in the last academic year, there were six full-time and two part-time BSCS faculty members. However, during the virtual site interviews, it was confirmed that currently there are four full-time and four part-time faculty members that handle BSCS courses. The Panel is of the view that the College should reduce its

reliance on part timers. The Panel notes that there is no faculty member with a full professor rank and there is a need to recruit more Information Technology (IT) technicians. The Panel recommends that the UTB should recruit more full-time faculty members and IT technicians.

- UTB has a dedicated policy on Faculty Professional Development, a Faculty Development Office (FDO) at the institutional level and a Faculty Development Committee (FDC) at the college level. The FDO coordinates with RC and conducts training and workshops based on the input from the Individual Faculty Development Plan (IFDP). The provided evidence lists numerous faculty development activities on IT and computing sciences. This was also confirmed during interviews with faculty members. There is also evidence that the FDO monitors and evaluates these activities.
- The Panel notes that the FDO and RC conduct regular workshops for faculty members to handle research courses and improve the level of supervision given to students enrolled in these courses. As per the SER, a satisfaction survey was conducted on capstone/research supervision at the end of the first trimester of the Academic Year 2019-2020, and it was found that the level of supervision was satisfactory. This was also confirmed during interviews with faculty.
- As per the SER, there is an annual faculty inventory prepared by the Head of HRD during the planning period every third trimester. The evidence provided shows that the College was able to achieve an average faculty retention rate of 90.4% from 2015 to 2019. However, the Panel notes as per the statistics submitted in the SER, the number of faculty members decreased from thirteen in 2015-2016, to ten in 2016-2017, and in 2019-2020 there were only eight faculty members. Hence, the Panel recommends that UTB should review the effectiveness of measures taken to retain the BSCS academic staff.

### **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**

- Based on the site visit tour video, the Panel is satisfied that UTB has adequate classes and laboratories. There are ten lecture rooms dedicated to BSCS courses, 14 computer laboratories, and an auditorium. The Panel finds that the classes and laboratories are appropriately equipped and are sufficient to serve the current number of students.
- As per the SER, the available IT facilities are managed by the IT Department which ensures that students and staff have access to the Information and Communication Technology

(ICT) resources. During the virtual site visit interviews with students, the Panel was informed that they are given permission to access MOODLE and the students' portal for online registration, and to view of their grades, schedules, and curriculum plans. Students can also access the library online database outside UTB premises by using the EZproxy and UTB provides them with Wi-Fi connectivity, in addition, to an Email service which is cloud-based and accessible from Personal Computers (PCs), Mac, and mobile devices. During the virtual site visit interviews with UTB staff, it was confirmed that they are provided with adequate IT services and laptops.

- The Panel notes that the UTB library has adequate resources including a collection of printed and digital copies of books, journals, and reference materials for the BSCS programmes. The library online databases include EBSCO Database, Business Source Elite, Computer and Applied Science Complete, Green file, Regional News, ERIC and Library and Information Technology Abstracts. As stated in the SER, there are reading areas provided for small group discussions and there are 20 computer stations that enable students to conduct catalogue searches and access resources, in addition to 15 iPads that enable students to access eBook collections of the UTB. Furthermore, there is a full time Chief Librarian and two staff members to assist students and faculty members.
- UTB has a policy on Physical Facilities Management and clear maintenance strategies that are currently used by the Facilities, Maintenance & Security (FMS) Department to conduct preventive, corrective, and statutory maintenance. The activities are done and documented in a maintenance checklist and service/ inspection report. The repair or renewal work and projects are done through the contracted maintenance. The Panel notes that the College conducts an annual inventory of resources in order to help the BSCS programme to purchase the needed textbooks, references, tools and equipment for the classrooms and computing laboratories.
- UTB has a policy on Health and Safety in place and as stated in the SER, there is a risk management plan for health and safety assessment and identification of hazards. As per the virtual site visit interviews and the provided evidence, UTB coordinates with the Civil Defence Protection and Safety Department and provides in-house security guards and contracted security guards.

## **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**

- UTB has a Management Information System (MIS), which consists of a Campus Information System (CIS), a Human Resource Management System (HRMS), and an e-library and e-references monitoring system. As stated in the SER and confirmed during interviews, the CIS is used by the internal stakeholders for various decision-making purposes in relation to admission, registration and grading and for effective management of the programme.
- The Panel was provided with a sample of generated reports and data on the utilization of e-resources such as the laboratories, e-learning, and the library that were used to make decisions. The evidence also shows that the utilization of the MOODLE system is monitored, and statistical reports are generated and discussed during committee and faculty meetings.
- UTB has clear policies and procedures in place for retaining assessment documents and booklets and for ensuring accuracy of the results and the security of the records from the student's admission until his/her graduation. Furthermore, it was confirmed during the virtual site visit interviews that the Registration Office maintains electronic student records through the CIS. In addition, UTB has an IT Disaster and Recovery Policy and an off-site back-up facility.
- As stated in the SER and confirmed during the virtual site visit interviews, there is a clear Policy on Eligibility for Graduation in place to prepare, verify, audit and release transcripts and certificates. As per the SER and the provided evidence, there are internal and external verification processes to ensure that all the requirements are fulfilled by the students before their graduation, including the maximum allowable time to finish the programme. The HEC also verifies and authenticates all documents submitted by the Registration Office; and the issued certificates are printed on special papers that bear UTB seal/stamp, authorized signatories, and the HEC's authentication stamp.

## **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: Addressed**

- UTB has a clear Policy on Student Academic Support Services. During the virtual site visit interviews, it was confirmed by students that the library provides them with different services and support. The IT Department also provides them with the required assistance and support to use available IT and e-resources. In addition, there are student clubs,

societies and activities that provide students with equal opportunities to engage in different activities and there is a lounge to ensure the privacy of female students.

- UTB has a Placement, Linkages and Alumni Office (PLAO) to conduct periodic career advising/guidance and to link graduating students with invited industry experts to improve their employability skills. However, based on the feedback received from the industry representatives during the virtual site visit in relation to the inability of BSCS students to properly market their skills and hence secure better career opportunities, the Panel recommends that UTB should conduct regular effective career counselling activities for students to clearly express themselves with confidence, such as: preparing for career interviews, writing Curriculum Vitae (CV), and conducting presentations using appropriate communication skills and language terminologies. The Panel also recommends that UTB should conduct regular career open days to enable students to meet with representatives from the industry.
- As stated in the SER, the OSS provides induction to new students (freshmen and transferees) and there is an assigned academic advisor for each student during the period of his/her study. The advisor is responsible for monitoring the progression of students and maintaining student portfolio progression documents. The Panel noticed during the virtual site visit interviews that students were satisfied with the induction and academic advising processes.
- UTB has a Special Needs Policy and a Guidance Office (GO) that supports students with special needs and assists them in issuing their university identification cards. The GO also follows their academic performance and provides them with tutorial sessions. The Panel noticed, during the virtual site visit virtual tour, that there are parking ramps, elevator handles, and tables for left-handed students inside each classroom. However, during the interviews, the Panel learned that there are no students with special needs that were admitted in the BSCS programme in the last three academic years. Thus, the Panel advises the UTB to assess the reasons for not admitting students with special needs in the last three academic years and to take the necessary actions, if needed.
- Academic advisors monitor the progression of at-risk students and maintain their portfolio progression documents. Furthermore, as per the SER, faculty members are required to identify students who achieved a mark less than 50% in an examination, so that they be provided with tutorial classes. The provided evidence includes a sample of a Student-at-Risk Monitoring Report sample, an Activity Report on Tutorial classes sample, and a Study on Effectiveness of at-Risk Interventions.
- The IRO at UTB regularly conducts Student Satisfaction Surveys (SSS) to improve the provided support services and this was confirmed by the staff and students during the virtual site visit interviews. As stated in the SER and during interviews, the SSS measures the level of satisfaction of the students based on their experiences with academic support,

facilities, policies and procedures in promoting UTB learning environment. In addition, the IRO analyses the collected SSS and produces the corresponding survey reports and these reports are disseminated to appropriate offices through the VPs and utilized to address the identified weaknesses and to prepare improvement plans to enhance services for all students.



## 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**

- There are suitable assessment methods, which include in-course projects, assignments, laboratory work, and final examinations. The Panel notes that both summative and formative assessment methods are used for each course; however, the Panel suggests including class participation as part of the course grading criteria, to further encourage students to ask questions and to improve their communication skills, curiosity and engagement level in the classroom.
- The depth and complexity of assessments are aligned with the course level (6, 7 or 8) and the CILOs. The SER explains the process used to ensure the appropriateness of the alignment of assessment tasks with the CILOs, which is revised by faculty members and external examiners and approved by the PH and the College Dean. This process was also confirmed during interviews with faculty. The Panel is satisfied with the process used to ensure the appropriateness of the alignment of assessment.
- UTB assesses the students' attainment of the ILOs at the course and programme levels using direct (course assessment results) and indirect (surveys) measures. The course assessment results and the survey reports of BSCS graduates are aggregated and analysed by the CRC to check if the PILOs have been successfully attained. The annual programme report includes a section in the PILO report that provides recommendations and actions plans for improvement. The Panel acknowledges the significant improvement made over the years to increase the PILO attainment scores, which currently range from 4.06 to 4.28 out of 5.00.
- In accordance with the Policy on Course Review, the assessment methods are reviewed annually in the course review report and during the periodic review of the programme. Based on the analysis of the feedback provided from internal and external stakeholders,

recommendations for improvement are made for each course and for the programme as a whole.

### **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: Addressed**

- UTB has clear and appropriate policies and procedures on academic misconduct to ensure that both academic staff and students are properly guided. They are appropriately communicated to academics and students through a series of orientations/inductions, in the Student Handbook and are being discussed in research and capstone courses. However, the Panel advises the reinforcement of academic integrity awareness among students, by including in each course syllabus, a reminder about misconduct policies.
- The Check for Plagiarism software is used by faculty and students for deterring and detecting plagiarism (with a similarity threshold set to a maximum of 20%). As confirmed during interviews with students and the evidence provided, students are expected to submit their homework assignments through the software before turning them in to their instructor.
- During the virtual site visit interviews, the Panel learned that some faculty members only accept reports if the plagiarism similarity score is less than 20%, where some faculty members accept reports even though the plagiarism score is above 20% and, by closely inspecting the detailed report, they identify if there is a real case of plagiarism or just similarities with commonly used sentences, facts, etc. The Panel recommends that UTB should revise its policy and procedures to let faculty members decide, based on the analysis of the detailed similarity report, if there is a significant case of plagiarism or not, regardless of the general threshold similarity value.
- There are appropriate policies and procedures that are in place to record and take appropriate actions related to academic misconduct and plagiarism. Students' academic misconduct is handled by the DSA. As per the SER and provided evidence, a Student Disciplinary Tribunal is created to investigate academic misconduct cases, and which recommends judgment based on established guidelines in the Student Handbook. All cases of student academic misconduct together with the corresponding resolutions are recorded in the DSA and included in the student's file.
- Cases of academic staff misconduct are handled by the Human Resource Department. The HRD forms an Employee Disciplinary Tribunal (EDT) that investigates the case in

accordance with the Faculty Manual and published policy. Academic staff misconducts are recorded in the HRD's related file.

### **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 BSCS programme follows UTB Policy on Moderation of Assessments. In terms of internal pre-moderation, the course coordinator is responsible for developing the Table of Specifications (ToS). This Table is submitted to the Specialization Coordinator (SC) for verification, then to the PH, and then to the College Dean for final approval. Once internally approved, the assessment scripts are sent to the external moderators for review and approval. This process was confirmed by faculty members during interviews. In terms of internal post-moderation, the marked students' booklets are submitted to the internal moderator to verify that the mark awarded is consistent with the marking criteria. In case of discrepancy (rarely happening based on the virtual site visit faculty interviews), a process is in place to handle it.
- Two mechanisms are used to evaluate the effectiveness of the programme's internal moderation. The first one is conducted through a regular IQA performed by the College Continuous Quality Improvement Committee. The results of the IQA report are submitted to the Dean and discussed in the College Council for potential actions and improvements. The second one is independently and periodically conducted by the Quality Assurance and Accreditation Department (QAAD) through an IQA report that is submitted to both the Vice President for Academic Affairs (VPAA) and the President. The results of this report are discussed at the Academic Council meetings for further necessary actions.
- During the virtual site visit, the Panel learned that one member of the QAAD was also involved in the internal moderation process and consequently should not be involved in its evaluation. The Panel also noticed, during the examination of the Evaluation Report for Internal Moderation for the Final Examination (April 28, 2019) and for the Test 2 (December 1, 2018), that all the moderation is done by one academic staff (24 different courses), in spite of the diversity of the courses. Furthermore, the Panel notes, based on the evidence provided, that internal moderation contributes to little (or no) improvement suggestions and that it is more like a formality, where everyone agrees and signs. Moreover, the Panel notes that some of the final examination questions are not appropriate to the course level (e.g., the 'Information Security and Governance' (CSCI637) course). The Panel also found some inconsistencies in some course portfolios that were not disclosed by the IQAs carried out by QAAD, which raises questions about the effectiveness of the

internal moderation and the mechanisms used by UTB to monitor the internal moderation process and ensure its effectiveness.

- Based on the recommendations that were sent to UTB before the extension visit, UTB has revised the Policy on Moderation of Assessments and the mechanisms used to ensure the effectiveness of the internal moderation process. The revised policy and mechanisms were first implemented in the second trimester of the Academic Year 2020-2021. During the extension visit, the Panel was informed that QAAD members are no longer involved in both the internal moderation and its evaluation process. The Panel was also informed that the pre-internal moderation is implemented by the College Continuous Quality Improvement Committee for all summative assessments to ensure that the assessments are fit-for-purpose and appropriate to the course levels in line with the revised Policy on Moderation of Assessments. Based on the provided evidence before the extension visit, the Panel notes that the pre-moderation is conducted in line with the revised policy and that the post-moderation of assessments is effective in verifying the consistency of marking and the sufficiency of the provided feedback to students.
- In terms of external moderation, two external moderators are appointed by the College Council following the recommendations of the PH and based on the evaluation of their competencies associated with the Computer Science topics cluster they will evaluate. Based on the virtual site visit interviews, the Panel learned that each external moderator was assigned around 20 courses to moderate, which represents a heavy load. Furthermore, the two external moderators are involved in the course pre-moderation and post-moderation of assessment scripts. They provide a report including commendations and recommendations regarding the assessment methods used, marking criteria, and performance of the students, among others.
- The Panel notes that the feedback provided by the external moderators is very succinct (one sentence for the whole examination script) and could be more detailed. Suggestions for major improvements are seldom provided due to their heavy workload. Based on the recommendations that were sent to UTB before the extension visit, the CS College has appointed an additional external moderator during the second trimester of the Academic Year 2020-2021, bringing the total number of external moderators/examiners to three. From the virtual interviews conducted during the extension visit and the evidence provided, the Panel noted that the increase in the number of external moderators has reflected positively on the efficiency of the moderation process. Nonetheless, the Panel recommends that the College should evaluate the performance of external moderators and the effectiveness of the internal and external moderation processes on a regular basis to ensure that these processes contribute to the review and improvement of both courses and the programme.

### **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 BSCS programme has clear and appropriate policies and procedures, defined at the UTB level, to manage the Work-Based Learning (WBL) process. The WBL is an integral and very important part of the BSCS curriculum.
- The roles and responsibilities of the internship providers, academic supervisors, training supervisors and students are set out clearly and are communicated to all the relevant stakeholders through the WBL Handbook. During the virtual site visit interviews, the industry practicum supervisors confirmed that their responsibilities are clarified before the internship begins and that the practicum advisors appropriately orient them and orient the students on the WBL policy and procedures.
- The provided evidence confirms that UTB ensures that the WBL ILOs are assessed and credited as part of the respective programmes where students are enrolled. The Panel found the WBL ILOs to be relevant for this type of learning activity.
- The assessment of the practicum course is appropriately conducted and computed through three sources of evaluation: performance evaluation by the practicum supervisor (50%), competence evaluation by the practicum training supervisor (20%), and practicum accomplishment report by the practicum advisor 30%.
- Employer and Student Satisfaction Surveys on WBL Experiences are used to evaluate their effectiveness and contribution to the achievement of the PILOs/PEOs, and this evaluation is used to improve the work placements. During the virtual site visit interviews, alumni and students clearly indicated how important and useful the internship course was for them as not only it helped them learn new skills and apply knowledge gained in class but also improved their ability to find a job once they graduate.
- Surveys are used to evaluate the satisfaction level of the practicum supervisor relating to their experiences during the pre-internship with the practicum advisor and experiences with practicum students. Results of these surveys are utilized during the annual course review where ILOs are reviewed, and improvements are monitored.
- The Panel learned from the programme external stakeholders/industry representatives that internship positions in international organizations are very competitive and some BSCS students were unable to get such positions due to language barriers, low communication skills and inability to properly represent themselves to employers. The Panel recommends the UTB should support the BSCS students in finding better internship

positions and strengthen their soft skills development, to best prepare them for job interviews.

### **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: Addressed**

- The Capstone/Research project course has two components with relevant and appropriate ILOs. The first one emphasises the development of the essential ideas, concepts, principles, tools, and skills needed for developing a research project. The second provides opportunities for students to integrate their knowledge by implementing a significant software system as part of a system development project including proper documentation in a real-world environment. The Panel advises research supervisors to strongly encourage students to look for innovative ideas for their research project with a commercial application in mind.
- The roles and responsibilities of the supervisors and students are clearly stated in the relevant policy and procedures on capstone/research projects and in the guidelines provided in the Research Handbook which stipulate the roles and responsibilities of the supervisors and students. They are communicated to all stakeholders *via* the university website and to students during their orientation.
- The capstone course /research project is assessed based on the submitted research project documentation 30%, working prototype 35%, and oral presentation 35%. It is assessed by a panel composed of three examiners consisting of two faculty members and an external panel member. The Panel notes that some research is conducted simultaneously by two students producing a single report. The Panel recommends that the College should clarify how each student's individual contribution, learning and performance are assessed in research projects conducted by more than one student.
- There is a regular monitoring and review of the progress of the students by the assigned supervisor through a research progress monitoring report filled out during each periodic meeting with the students. The students' satisfaction with the supervision process and resources available to carry out their research is assessed through a survey. The survey report serves as a source of input in the annual course review process, which aims to identify aspects in the research project course that need improvement.

## 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**

- Based on reviewing the course assignments in the student's portfolio samples provided, the Panel notes that the depth and complexity of assessments in most courses are appropriate and aligned with the course level (6, 7 or 8) and the CILOs. The quality level of the capstone projects is generally acceptable. However, as indicated in Indicator 3.3, the level of the assessment questions, especially the final examination questions for some courses are not appropriate to the course level. Based on the recommendations that were sent to UTB before the extension visit, UTB revised its moderation processes as clarified under Indicator 3.3.
- Each course coordinator in the programme prepares a course report that includes among others the learning outcome attainment by the students, the grade distribution of the cohort, and the course evaluation. The programme reports the achievement of the students in the six clusters of courses as per the ACM bodies of knowledge classifications. The Panel noticed that for some clusters (#2, #4, #5) the average grades were very low (C+). Based on the recommendations that were sent to UTB before the extension visit, the CS College hired two new CS academics to cover courses in clusters #2, #3, and #5 in order to provide more sources of support to students in these particular clusters, particularly in a time where Artificial Intelligence and Machine Learning technologies/programming (cluster #2) are becoming technologies in high market demand. Furthermore, in order to improve the quality of teaching and learning by integrating up-to-date technologies in the process of teaching and learning through, the Panel notes with appreciation that UTB became a certified Huawei ICT Academy Partner. As a benefit of Huawei partnership, the faculty of BSCS programme receive training to become professionally certified in AI technologies. Also, as a result of this partnership, a number of students became certified in AI (HCIA-AI). In addition, UTB has conducted a number of webinars to ensure that the BSCS students are aware of the recent computing technologies that are currently used in the market.
- In terms of the ability of students to create and innovate, despite the fact that some students are competing (and some winning) in local and regional IT competitions, the Panel recommends the CS College should further encourage/challenge students to be much more novel in their project/research topics selection, looking to design and develop more radically new applications.
- The BSCS regularly collaborates with the Placement, Linkage and Alumni Office to conduct career orientation workshops and career fairs to help graduates find suitable

employment opportunities. Additionally, a tracer study is conducted on an annual basis for BSCS graduates to gather information about their initial and successive employers. Such data helps the BSCS to better understand the market fast evolving needs and to identify potential job opportunities.

- As per the SER the average retention is 86% and the length of study to complete the programme is 5.49, the Panel finds this data to be appropriate for this scientific discipline. The statistics provided in the SER also show that 91.17% of the BSCS students who graduated in the last three academic years are employed and most of them work in IT-related fields.
- The BSCS programme conducts annual alumni and employer surveys through the PLAO which submits reports to the College. The 2018 employer average satisfaction score was 4.69/5, which indicates a high level of satisfaction. During the virtual site visit, some of the internship employers mentioned that in the past they hired some of the intern students since they found them to have the right skills for the job and that they were fast learners. Similarly, the alumni survey shows satisfaction scores above 4.55/5. During the virtual site visit, the alumni indicated that they were well prepared to enter the job market and that they were happy with the skills and knowledge they had gained through their BSCS programme at UTB. They also appreciate the fact that the University stayed in touch with them and invited them to give or attend special seminars/talks.



## Standard 4

### Effectiveness of Quality Management and Assurance

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

#### Indicator 4.1: Quality Assurance Management

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

##### **Judgment: Addressed**

- UTB has policies and procedures that are in place for managing the BSCS programme. Academic and Administrative Policies and procedures are outlined in the Operational Manual. As per the virtual site visit interviews and the SER, key policies and procedures are discussed during orientation sessions, college faculty meetings, and memoranda. These policies and procedures are disseminated to all staff and are available to all other stakeholders through the university website.
- UTB has a policy for revising and updating the existing quality assurance mechanisms, procedures and policies, and according to this policy, policies are reviewed after five years. The President of the University may, at any time, direct the revision or review of any policy. Committees when exercising their duties and responsibilities may require/initiate the process of policy revision, However, the Panel was not provided with evidence to show that a recent review of the policies and procedures was carried out, and an amendment was implemented and approved by different authority levels.
- UTB has a Quality Management System (QMS) that is implemented by the CS College and BSCS programme. As explained in the SER, the QMS Process Model includes after the identification of internal and external requirements, a plan, do, check, and act process. However, the mechanism or the method used to determine the requirements was not mentioned or specified clearly in order to ensure that these requirements are correct and realistic.
- Based on the recommendations that were sent to UTB before the extension visit, the University has reviewed and amended several policies and procedures, including the mechanism used in defining the requirements of external and internal stakeholders, the Policy on Moderation of Assessments, the Policy on Programme Development, Enhancement and Review, and the Policy on Course Implementation and Review. The

revised policies include clear procedures on how the internal and external requirements are identified during the development and/or review of programmes and courses.

- The College Dean and PH monitor the consistent implementation of policies and procedures. The College standing committees participate in their various domain areas to both implement and improve the quality processes by preparing related accomplishment reports. Also, the CQI Committee of the College produces periodic reports, such as Report on Exam Moderation and Assessment, which are submitted to the College. In the SER, it is also mentioned that the College and committee officers follow UTB policies and procedures in order to ensure effective implementation of the College's Academic Plan, Operational Plan, Faculty Development Plan, and Research Plan, with a major target of keeping continuous quality improvement. However, there was no sufficient evidence provided to the Panel during the site visit to show the effectiveness of the implementation of these plans which were carried out by the college officers.
- Based on the recommendations that were sent to UTB before the extension visit, UTB has reviewed the effectiveness of its QMS. The effectiveness of implementing the various plans at the institutional and college levels was measured through the implementation of the dashboard system by the Planning and Development Department (PDD). The colleges, committees, and other offices are required to send a report of accomplishment with the supporting documents to the PPD at the end of each trimester to update the dashboard accordingly. The dashboard tracks the effectiveness of the plans in achieving the desired outcomes, and can be used by the process owners to adjust, if necessary, their plans to make sure that it achieves its intended outcomes given a specific time frame.
- The University provides different orientation activities at both the university and college levels to ensure that academic and support staff understand their roles in relation to the quality assurance in UTB, as shown in different supporting materials. However, the Panel notes that there is no evidence on the existence of a mechanism for evaluating the orientation activities. Based on the recommendations that were sent to UTB before the extension visit, UTB provided the Panel with additional evidence, which includes the Policy on Faculty Induction, Peer Review and Mentoring Program. During the extension visit, the Panel was informed that the CCS started conducting focus group discussions with newly hired faculty members at the end of the trimester to assess the impact and effectiveness of the orientations and mentoring.
- Although appropriate activities are carried out regularly at different levels to ensure that the QMS is monitored and evaluated in order to provide recommendations for improvement, during the site visit the Panel was not provided with sufficient evidence indicating that the recommendations and proposed actions are monitored and implemented. The evidence provided through the extension visit indicates that UTB has revised its QMS process where the review and monitoring of improvements at the

institutional, college, and department levels were strengthened, as explained earlier in this Indicator.

## **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**

- There is an appropriate organizational structure to support academic and administrative functions. All the academic and administrative staff including the VPAA, Dean, Programme Head Specialization Coordinator, and Course Coordinator, have job descriptions where the chain of command and their duties, work relationships and responsibilities are clearly stated.
- The meetings of the College Council and College Faculty are in place to ensure effective communication of various decisions and practices within the College, and also as an opportunity to listen to faculty suggestions and feedback at both college and department levels. The Panel acknowledges that the existing reporting lines are clear and suitable for the communication between different levels within the CS College and for the decision-making process.
- UTB has committee structures at the institutional and college levels with clear Terms of Reference (ToR) and guidelines. Each college standing committee consists of one chairperson, one co-chairperson, and at least one member as a representative from each department or specialization of the College. The Panel notes, however, that the guidelines give no details of the membership of those committees, including the students. There is also a mismatch (in number and names) between the list of the institutional committees mentioned in the Committee Structure document and the SER. Furthermore, the Panel notes that some committees did not meet according to their ToR.
- Based on the recommendations that were sent to UTB before the extension visit, students from the Student Council were added to some committees. UTB has also revised the Standing Committees Guidelines to show the expected functions and outcomes of each committee. As per the revised Guidelines, each committee must submit a progress report at the end of trimester to the PDD showing the work accomplished by each committee. The CCS Committee Progress Dashboard 2021 shows that their current performance is 97.62%.
- In relation to the custodianship of the academic standards, the SER mentions that the Academic Council at the institutional level maintains the academic standards of all programmes covering areas of teaching and learning, assessment, research and

community engagement. At the college level, the achievement of the academic standards of the BSCS programme is monitored by the College Council. In the SER, it is also mentioned that 'Findings from the audit of the implementation of policies and procedures in the College are acted upon by the College Council and the corresponding improvement plans are implemented', but no sufficient evidence was presented to the Panel to support the SER claims during the site visit. However, based on the recommendations that were sent to UTB before the extension visit, this issue was resolved as explained under Indicator 4.1.

- As per the SER, the VPAA is responsible for setting the University's academic programmes, strategies, and priorities ensuring high academic reputation and image of the University. Leadership and coordination in the design, development, implementation, and evaluation of all matters relating to curriculum, instruction, research and academic services through the different colleges, offices and centres are also provided by the VPAA. At the college level, the Panel notes that College Dean is heading a number of committees and teaching a number of courses in the CS Department. However, the Panel was informed during the site visit interviews about the non-renewal of the work contract of the College Dean and his management of the College remotely outside the Kingdom of Bahrain. At the time of the extension visit, the Panel was provided with evidence, which shows that UTB has officially appointed a Dean for the College of Computer Studies and a PH for the BSCS programme, to make sure that the programme is delivered as planned.

### **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**

- UTB has a Programme Development, Review and Enhancement Policy with clear guidelines on the annual programme evaluation process. The BSCS programme implements this policy by preparing a Self-Evaluation Survey (SES) and a comprehensive annual programme report on the main aspects of the programme with recommendations for improvements.
- At the course level, the BSCS programme annually conducts course reviews led by the CRC to check the quality of delivering the courses in terms of the achievement of course learning outcomes, the appropriateness of TLA methodologies and the currency of the courses. As per the SER, the BSCS implements the recommendations stated in the SES and the annual programme report, in coordination with the College CQI Committee and QAAD in order to ensure proper implementation and monitoring.

- The review and improvement policy describe the procedures of initiating improvement action plans and following up their implementation at different levels in the University. However, during the virtual site visit interviews, it was confirmed that there are no clear procedures on how to ensure that actions are being implemented within the planned timeframe. In addition, there is no evidence on following up on these actions to ensure closing the loop for each specific action. Based on the recommendations that were sent to UTB before the extension visit, this issue was resolved as indicated under Indicators 4.1 and 4.2. A dashboard is currently used by PDD to measure the effectiveness and progress of the improvement plans.
- The BSCS programme uses course portfolios that contain: course specifications, course learning materials, lesson plans, course reports, and course assessments and assessed work, to monitor and evaluate the quality of the courses. The Course Coordinator and the Head of the Programme check the contents of the course portfolios. The QAAD through the IQA also checks the content of the course portfolios; however, the Panel found, through the examination of number of course portfolios - that not all the course portfolios are consistent in terms of quality of their document contents. Based on the recommendations that were sent to UTB before the extension visit, the QAAD developed a standard format with clear guidelines to ensure the quality of course portfolios and the consistency of their contents. The QAAD and the CQI Committee also conducted an orientation session to all full-time and part-time academic members on the guidelines, and acceptable quality and standards of course portfolios. Furthermore, the CQI Committee conducted an IQA on the course portfolios of the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> trimesters for the Academic Year 2020-2021. By reviewing the sample of the course portfolios during the extension visit, the Panel found some inconsistencies, despite the obvious progress in the level and quality of the preparation of course portfolios. The Panel advises the programme team and other committees to strictly check the contents of the course portfolios.
- The Policy on Programme Development, Review and Enhancement includes a section on periodic reviews of the programme. As stated in the SER, the periodic review covers all aspects of the programme (e.g., curriculum, teaching, learning and assessment strategies, learning outcomes, facilities, admission requirements, graduation requirements, and market requirements); however, there is no clear guidelines on the procedures to be followed to cover all these aspects. Furthermore, the programme review summary report is not a comprehensive report focusing only on changes that affected the structure of the programme, such as adding, replacing and updating some courses. Based on the recommendations that were sent to UTB before the extension visit, UTB has reviewed and enhanced the Programme Development, Review and Enhancement Policy, which was approved by the Academic Council in the 2<sup>nd</sup> trimester of the Academic Year 2020-2021. The Panel noticed that, in the updated policy, no information was mentioned on the programme review summary report, its contents and who prepare it, as required by the recommendations. Therefore, the Panel recommends that UTB should develop a clear

guideline on the procedures to be followed during the preparation of the periodic review summary report of its programmes.

- The evidence provided to the Panel before the extension visit includes an improvement plan that has been made to address the comments mentioned in the periodic review report. The College CQI Committee Monitor and follow-up on the improvements, status of implementing action plans arising from periodic reviews, assessment and IQAs. However, the last periodic review was not comprehensive, and the updated policy has not been applied yet to the BSCS programme. Hence, the Panel recommends that the College should ensure that the programme periodic reviews are implemented in line with the revised Programme Development, Review and Enhancement 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**

- UTB has a Benchmarking Policy which specifies the purpose, scope, responsibilities and procedures of this activity. The policy refers to two types of benchmarking (formal and informal) and states that QAAD in coordination with the VPAA Office and the PDD are responsible for conducting the benchmarking; while, in the same policy and the SER, it is mentioned that colleges and departments conduct the benchmarking. Furthermore, neither the timing nor the periodicity of the benchmarking activities was mentioned in the policy. Based on the recommendations that were sent to UTB before the extension visit, the Benchmarking Policy was updated to include the timing and periodicity of conducting the benchmarking. The revised benchmarking policy outlined the composition of different benchmarking committees, the procedure, criteria, areas, benchmarking activities, deliverables, and procedures of benchmarking besides the role of each main stakeholder.
- The provided evidence and the virtual site visit interviews with faculty members indicate that the BSCS programme conducts informal benchmarking activities at the end of each academic year. There is evidence that an informal benchmarking was conducted between the ACM-IEEE graduate attributes and the PILOs of the BSCS programme, but there is no evidence that such benchmarking was conducted with the Computer Science Accreditation Board (CSAB), as mentioned in the SER. The sample of informal and formal benchmarking report that was provided to the Panel was, in fact, a simple direct comparison of the points of similarity and difference with similar local, regional and international programmes, rather than an in-depth analysis of the comparison areas that need improvement and setting the appropriate procedure for development. The

additional evidence that was provided to the Panel before the extension visit also indicates that the benchmarking process is a simple direct comparison of points of similarity and difference with other universities and not all the criteria are covered in the benchmarking. The Panel recommends that the College should conduct an in depth formal and informal benchmarking analysis with local, regional and international institutions in line with the revised Benchmarking Policy.

- As mentioned in the SER, UTB uses the surveys to collect the feedback of internal (students and employees) and external stakeholders (alumni and employers). The University has a Survey Policy in place and there is a Survey Manual which contains the related procedures. The PDD in coordination with the colleges concerned, departments, and other units, regularly conducts surveys through the IRO. It is clear from the SER and the supporting documents that the PDD and IRO conduct the analysis of the surveys and forwards the results to the concerned departments which, in turn, formulate improvement plans to address the gaps and recommendations derived from these surveys.
- From the provided evidence and the interviews conducted during the site visit, the Panel confirmed that UTB conducted a large number of different surveys. The Panel notes from reviewing the reports of the surveys, that an in-depth analysis is needed, so that the results of the surveys can be used for improvements. Furthermore, the Panel confirmed that the University had not reviewed the surveys to ensure their effectiveness in improving the quality of programmes. Moreover, from examining the Survey Manual and other supporting documents, it was clear that the QAAD has no role in the whole process of developing, reviewing, distributing and analysing these surveys. Based on the recommendations that were sent to UTB before the extension visit, the Survey Policy was revised to define the role of the QAAD in the review and approval of surveys. The PDD worked with QAAD and other departments in UTB to review the surveys. The IRO and PDD conducted a separate reliability test to assess the effectiveness of the surveys, and the surveys were revised accordingly and were approved for implementation.
- As per the SER, the results of the surveys are disseminated through publication in the UTB website, DATALINE newsletter, bulletin boards, stakeholders' meetings and assemblies. Furthermore, the results are also communicated to the PIAP during its meetings. Aside from receiving email communications regarding the results of surveys, the alumni are informed about the results of the Alumni Survey during the Alumni Homecoming and Career Fair and during events for employers.

#### **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**

- UTB has a policy for the PIAP that clearly outlines the structure and responsibilities of the PIAP, as well as the number of meetings and membership terms. The BSCS PIAP includes expert members from different backgrounds (employers, professional organization and alumni), as per the policy.
- In the PIAP Annual Reports, it is mentioned that for the last three years the PIAP met twice annually, while PIAP policy indicates that it should conduct five meetings annually. The Panel advises the CS College to adhere to the number of meetings stipulated in the PIAP policy, or to modify the policy if needed. PIAP meetings are used to provide the BSCS programme with constructive feedback and recommendations for improvement. The Panel notes a number of proposals presented by the PIAP for the development and enhancement of the BSCS programme in terms of curriculum, research orientations, and community engagement activities. However, the Panel was not provided with sufficient evidence on the implementation and follow up of these proposals. Based on the recommendations that were sent to UTB before the extension visit, this issue was resolved as indicated under Indicators 4.1 and 4.2.
- The Policy on Programme Development, Review and Enhancement has a clear mechanism for periodic reviews of the programme to ensure its relevance to the market and community needs. Also, BSCS utilizes other external reports such as Bahrain 2030 Vision, HEC's National Strategy and the UTB commissioned labour market scoping Report, to ensure that the BSCS programme is relevant to the labour market needs and up-to-date.
- The UTB Market Scoping Report which was prepared in 2015, reflects the efforts done by the University to scan the market needs, so as to ensure that the current programmes, including BSCS are relevant and up-to-date. As a result of this study, the curriculum of the BSCS programme was enhanced by adding some courses on Software Testing and Evaluation, and Cloud Computing, and by strengthening the soft skills of the programme's graduates. The Panel advises the College to conduct the market needs analysis on a more regular basis due to the rapid changes and developments in the programme field.



## 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 Science of College of Computer Studies offered by the University of Technology Bahrain/ Previously AMA International University- Bahrain.**

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

1. The mechanisms employed by the University to ensure the comparability of the course intended learning outcomes and their appropriateness to the level of the degree in line with the National Qualifications Framework requirements.
2. The Bachelor of Science in Computer Science students are encouraged to participate in workshops/seminars provided by partners such as Institute of Electrical and Electronics Engineers, INJAZ and Huawei as well as the national and international competitions related to computing and software development such as Imagine Cup, Brinc Batelco and Hackathon to enhance their creativity and innovative skills.
3. The University of Technology Bahrain/ Huawei partnership, which enables the faculty and students of the Bachelor of Science in Computer Science programme to receive training and become professionally certified in Artificial Intelligent technologies.

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

1. Revise and rephrase the Programme Intended Learning Outcomes in order to distinguish them from those prescribed by Accreditation Board for Engineering and Technology, taking into consideration the needs of Bahrain's labour market and society.
2. Establish an incubator laboratory and implement a policy for academic staff and students' entrepreneurship and innovation to allow for significant contributions.
3. Review the effectiveness of its research policy and the support provided to faculty members for their research projects and promotions.
4. Recruit more full-time faculty members and Information Technology technicians.
5. Review the effectiveness of measures taken to retain the Bachelor of Science in Computer Science academic staff.

6. Conduct regular effective career counselling activities for students to clearly express themselves with confidence, such as: preparing for career interviews, writing Curriculum Vitae, and conducting presentations using appropriate communication skills and language terminologies.
7. Conduct regular career open days to enable students to meet with representatives from the industry.
8. Revise its policy and procedures to let faculty members decide, based on the analysis of the detailed similarity report, if there is a significant case of plagiarism or not, regardless of the general threshold similarity value.
9. Evaluate the performance of external moderators and the effectiveness of the internal and external moderation processes on a regular basis to ensure that these processes contribute to the review and improvement of both courses and the programme.
10. Support the Bachelor of Science in Computer Science students in finding better internship positions and strengthen their soft skills development, to best prepare them for job interviews.
11. Clarify how each student's individual contribution, learning and performance are assessed in research projects conducted by more than one student.
12. Encourage/challenge students to be much more novel in their project/research topics selection, looking to design and develop more radically new applications.
13. Develop a clear guideline on the procedures to be followed during the preparation of the periodic review summary report of its programmes.
14. Ensure that the programme periodic reviews are implemented in line with the revised Programme Development, Review and Enhancement Policy.
15. Conduct in depth formal and informal benchmarking analysis with local, regional and international institutions in line with the revised Benchmarking Policy.