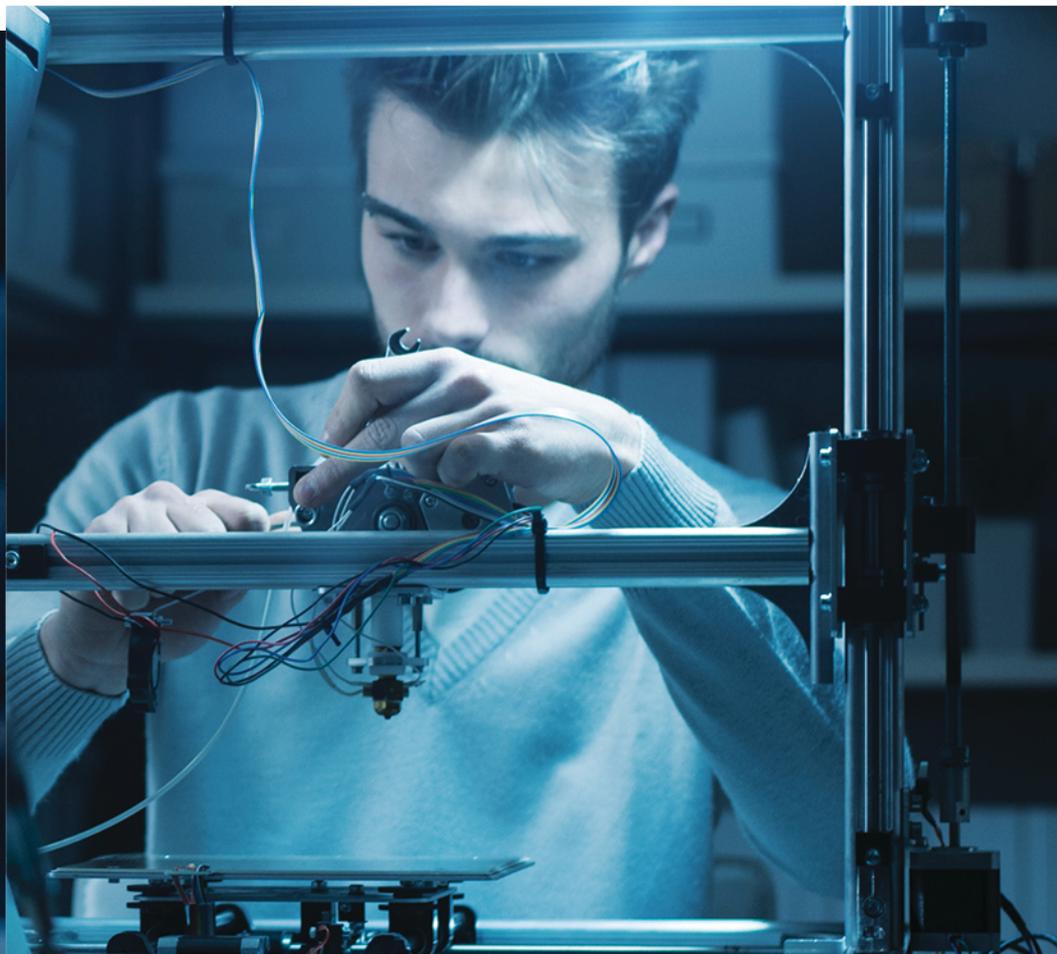


UTB/2022  
<if.page=open\_read>  
V2.0\_Second Edition

<follow progress>  
@utb\_bahrain



# University Catalogue SY 2022 - 2023





## TABLE OF CONTENTS

About the University .....	4
University Organogram .....	7
Message from the President .....	8
Vision, Mission and Values .....	9
University Resources and Facilities .....	10
Student Services .....	16
Admission to the University .....	17
Registration .....	22
Fees and Payment .....	23
Academic Policies .....	25
Student Rights and Responsibilities .....	33
Academic Programmes .....	35
University Officers .....	215





## ABOUT THE UNIVERSITY



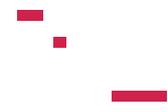
University of Technology Bahrain (UTB) follows on from a vision and mission adopted for the university and in line with a host of improvements currently being executed. Guiding the new vision is the belief that UTB will advance the discovery and application of knowledge that will increase economic growth and development, while continuing to inspire students and the future generations to come. It also reflects the university's core mission which has been redefined to educate and inspire students in cutting edge technology, science, and business fields and prepare them for the world of work.

Visually, the UTB identity has been created with students in mind, focusing on a youthful application and modernistic representation through the use dynamic typography and vibrant color, and shall be reflected in all aspects of the university's identity, marketing, and communications.

The University offers bachelor and graduate programmes which are on a par with the best universities worldwide, taking pride of its programmes which have sustained the rigorous scrutiny of various international accrediting bodies.

The business programmes, under the College of Administrative and Financial Sciences, include the Bachelor of Science in Business Informatics, Bachelor of Science in International Business, and Master of Business Administration. All these had received full accreditation status from the European Council for Business Education (ECBE), an international organization which ensures that its accredited members satisfy the requirements of the European Higher Education set out in the Bologna Process and other European standards. Considering that the global economy is dependent on business opportunities at large and a number of startups are booming to date, the college also offers Bachelor of Science in Accounting and Finance.





The College of Computer Studies offers Bachelor of Science in Computer Science programme which is accredited by ABET's (Accreditation Board for Engineering and Technology) Computing Accreditation Commission. To train students in turning their hobby of keeping up with the latest advances in the field of information technology into a promising career, the college also offers Bachelor of Science in Information Technology from which students can progress to one of the three (3) majors – Applications Development, Networking and Cybersecurity, and Data Analytics and Artificial Intelligence.

The engineering programme offerings under the College of Engineering are Bachelor of Science in Informatics Engineering and Bachelor of Science in Mechatronics Engineering. These programmes are also accredited by ABET's Engineering Accreditation Commission. To train students in applying technological solutions to challenging environmental issues, the college offers Bachelor of Science in Environmental Engineering.

The University has made an indelible mark in Bahrain's academic community being the first private university to have ABET accreditation in its computing (2012-2019) and engineering programmes. ABET is the highest accrediting body in applied sciences, engineering, computing, and technology.

All these internationally accredited programmes are proofs that the university continuously uplifts its culture of academic excellence by delivering quality higher education in the Kingdom of Bahrain and positioning itself as an active actor in the country's socio-economic development.

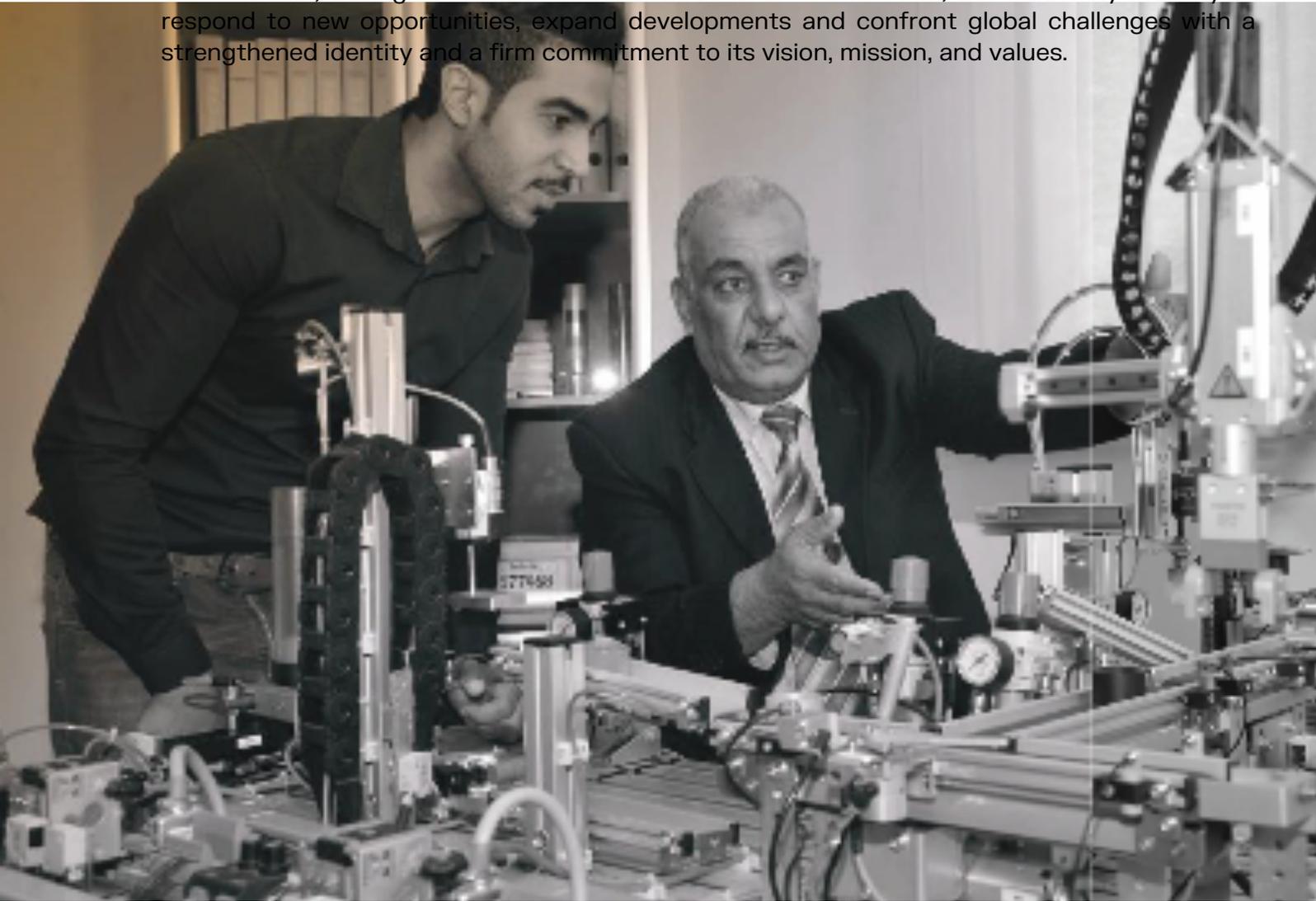
In addition, the bachelor and graduate programmes, International Foundation Year programme, in collaboration with Northern Consortium of United Kingdom (NCUK), provides nine months of intensive skills training to international students. After completing NCUK International Foundation Year programme at UTB, students can progress to a wide variety degree programmes in world-class universities in UK, USA, Canada, Australia, New Zealand and other popular study destinations.

To strengthen partnerships locally and internationally, UTB has forged ties with two French institutions, namely ECE Paris and IT Paris Eiffel. The partnerships cover various areas such as student exchanges, faculty exchanges, and joint research projects, among others. Recently, UTB has conducted formal benchmarking activities with Tiffin University (Ohio, USA); University of Sharjah (Dubai, UAE); International Islamic University of Malaysia (Kuala Lumpur, Malaysia); and University of Malaya (Kuala Lumpur, Malaysia). A draft of the Memorandum of Agreement for the partnership of UTB with University of Versailles at Saint Quentin-en-Yvelines (France) is now being reviewed and finalized. To enrich the work-based learning experiences of the students, the University has established partnerships with the leading industries in the Kingdom such as the Gulf Aluminum Rolled Milled Company (GARMCO), Hirestream, and Inter Continental Regency Bahrain.

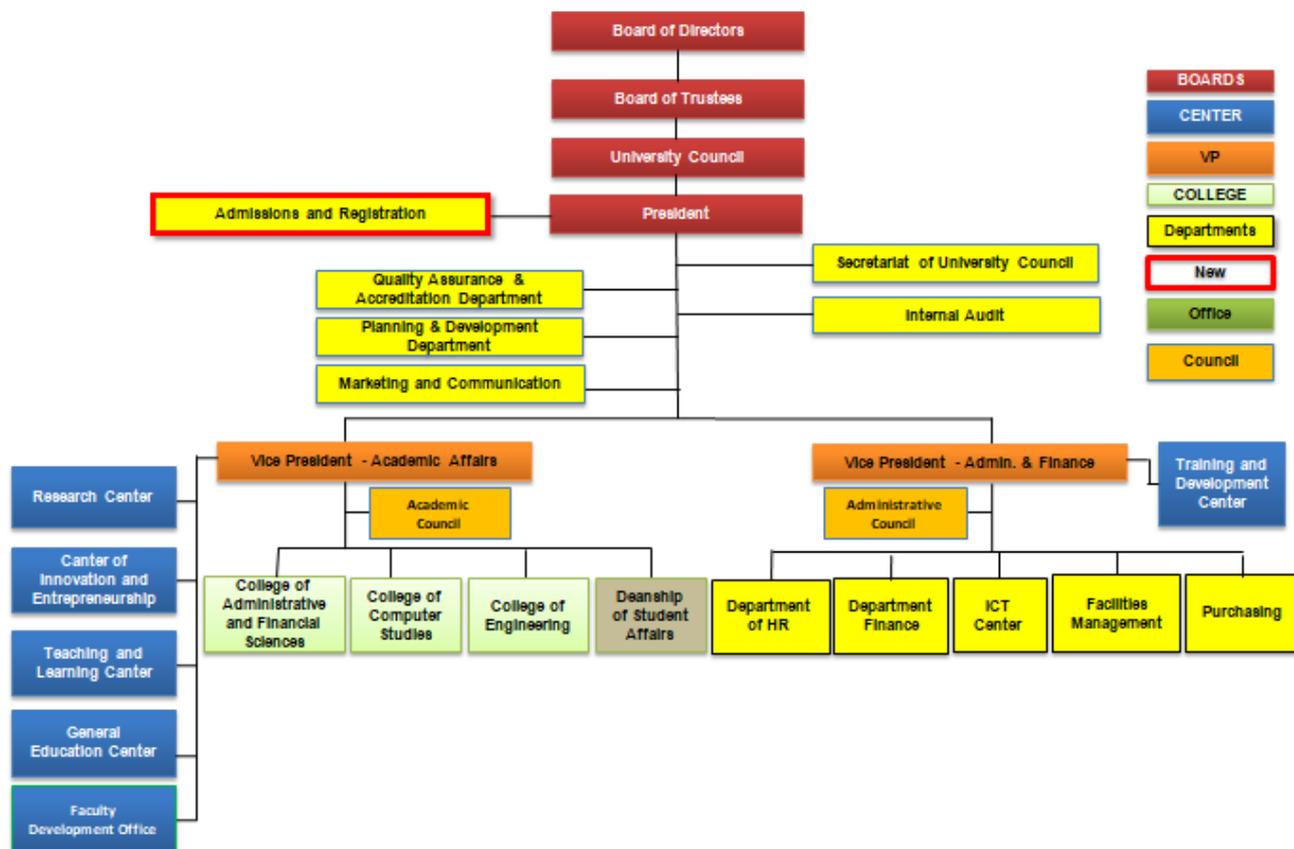
In its pursuit to be globally excellent, the university provided physical resources that enable to carry out its mission with a high level of quality and efficiency. Classrooms are well-equipped with LCD projectors and smart boards. The ultra-modern laboratories such as the Speech, iMac, Research, SAP, CISCO, and Mechatronics, among others provide exceptional hands-on learning experiences which are critical to the students' learning process. The library has sufficient print, media, and electronic resources that serve as a catalyst for literacy and scaffolding for teaching and learning.



Hence, through the collaborative efforts of all stakeholders, the University is ready to respond to new opportunities, expand developments and confront global challenges with a strengthened identity and a firm commitment to its vision, mission, and values.



# UNIVERSITY ORGANOGRAM



## MESSAGE FROM THE PRESIDENT



Your education at University of Technology (UTB) centers on you and that your success is our primary concern. All the university stakeholders – management, administration, faculty, and industry partners – work together to provide you with a conducive environment to develop essential knowledge and competencies, hence enhanced capability to meet the expectations of the evolving labor market.

UTB is committed to serve as a key player in the provision of quality higher education in the Kingdom of Bahrain through its innovative programme offerings, namely: NCUK International Foundation Year (IFY), Bachelor of Science in Environmental Engineering (BSEnE), Bachelor of Science in Informatics Engineering (BSIE), Bachelor of Science in Mechatronics Engineering (BSME), Bachelor of Science in Information Technology (BSIT) in 3 Majors - Applications Development, Networking and Cybersecurity, and Data Analytics and Artificial Intelligence, Bachelor of Science in Computer Science (BSCS), Bachelor of Science in Accounting and Finance (BSAF), Bachelor of Science in Business Informatics (BSBI), Bachelor of Science in International Business (BSIB), and Master of Business Administration (MBA). These programmes come with countless opportunities, relevant curriculum options, and transformative avenues for your professional success.

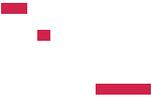
Believe that you will be successful in whatever academic goal you set for yourself. May you find this catalog responsive as you plan your course of study. Likewise, you are also welcomed to visit the university workdays at your most convenient time.

I wish you all the best!

**DR. HASAN ALMULLA**

*President*







## VISION

The University of Technology Bahrain will contribute to the advancement and application of knowledge and will have a transformative impact on the lives of learners and the society, whilst continuing to inspire students and the future generation to come.

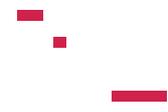
## MISSION

To contribute to the growth and sustainability of the economy and the expansion of human knowledge in business, science, and technology by fostering continuous innovation and excellence in education and research, strategic partnerships, international recognition, and entrepreneurial development.

## VALUES

1. Excellence and quality
2. Professionalism
3. Creativity and Innovation
4. Growth and Development
5. Commitment and engagement
6. Collaboration
7. Integrity





## UNIVERSITY RESOURCES AND FACILITIES

### **Administration Building**

The administration building houses all administrative offices including the office of the President, office of the Vice President of Academic Affairs, office of the Vice President of Administration and Finance and all other offices of administrative officers. The university library is also located in the main administration building.

### **Academic Buildings**

The academic buildings shall be equipped with the latest technology and will cater to the needs of business, engineering, and computer science students. The academic buildings shall house the offices of the College Deans.

### **Admissions Office**

The Admissions Office provides quality service and accurate information on educational opportunities to prospective and new students at the University.

### **Registration Office**

The Registration Office maintains UTB student records that accurately reflect student achievements and implements an effective registration procedure. It maintains the Campus Information System (CIS) to ensure integrity, confidentiality, and security of student records.

### **Treasury and Accounting Office**

The Treasury and Accounting Office provides financial information and reports to support the University community including academics, research, auxiliary, student services and public outreach organizations. The Office is responsible in providing timely, accurate and meaningful financial information of students to the management.

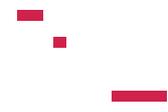
### **Information Technology Data Center**

The Information Technology Data Center serves the computer-related needs of the students, faculty, and staff. It manages and maintains the Internet-connected laboratories where students can use state-of-the-art computer facilities and access software and electronic resources to support their learning and research needs. Wireless network is provided to all students and members of the faculty and staff.

### **Deanship of Student Affairs (DSS)**

The Deanship of Student Affairs promotes a campus environment that provides quality services and increases student retention and success. The Dean of Student Affairs shall provide personal counseling, academic advising, referrals, academic tutoring, student





activities planning, and sports and recreational programs. It provides support and resources for orientation, transition, retention, graduation, and pre-employment activities to better prepare students grow personally and professionally. The Office, located at the ground floor of the North Wing of the building aims to assist new students to easily adjust to life at the University.

### **Placement Linkage and Alumni Office**

The Placement, Linkage and Alumni Office is responsible for identifying external institutions to serve as partners in the implementation of the programs and services of the office. The Head of the Office also provides a link between the graduates and the University, thus, ensuring a sustained spirit of belongingness and promotes communication among graduates.

### **Health Center/Clinic**

Health Service shall be available from 8:00 am to 5:00 pm, Sunday to Thursday. Services shall include treatment of minor health emergencies and conditions, dispensing medication for minor health problems and providing students with medical referrals.

### **Sports Facilities**

The University provides sports facilities to support athletic activities.

### **Cafeteria**

The University has restaurants and snack counters conveniently located inside the campus to provide dining services.

### **Parking**

The University has a spacious parking lot which can accommodate 500 vehicles.

A copy of the following should be submitted to the Office of the Student Services to process your car's registration:

- Certification of Registration (COR)
- Certificate of Permanent (CPR)
- Car Registration Card
- Student's Contact Number

Students should abide to the parking rules set by the Office of Student Assistance and observe the designated areas reserved for the handicapped. Violation of parking rules shall be fined with BD10. A designated area for handicapped people is also made available. Roving guards are assigned to patrol the area from 7:30am to 9:00pm.

### **Library**



The University Library provides print collections of books, journals, theses, and abstracts supplemented by e-books available 24/7 to enrich the University's educational programmes. The library catalog and databases are accessed both on campus and off campus using a username and password assigned to every student. The collection is rich in resources for business, communication, information technology, and engineering.

Special services for students shall include orientation to the library services and collections, individual reference conference to persons undertaking major research papers, individual stations for audio and video materials, computer stations with internet access, a Wi-Fi spot, and reproduction equipment.

The University Library is open between the following time periods and days:

- 8:00 am – 9:00 pm (Sundays to Thursdays)
- 8:00 am – 4:00 pm (Friday & Saturdays)
- Closed on Public Holidays

### **Mechatronics Laboratories**

The Mechatronics Laboratory houses the pneumatics and electro-pneumatics sections and the Modular Production System. The Mechatronics Lab uses the FESTO Didactic Learning System for Automation and Technology. The systems and stations of the MPS to facilitate industry – oriented training since the hardware consist of didactically suitable industrial components.



## Digital Laboratory

The Digital Laboratory is well equipped with both De Lorenzo hardware and software facilities used by the students to perform the necessary experiments required in the Digital Systems course. Experiments are related to both digital hardware, electrical, and electronics circuits. The laboratory is equipped with all the hardware and software resources so that the students become adept in the basic field of digital electronics.



## Computer Laboratories

Courses requiring the use of computers are held in any of the fifteen computer laboratories that occupy the west and north wings of the University. A dedicated laboratory used for the Cisco Networking Academy Program is equipped with the latest Cisco routers and switches. The two Mechatronics laboratories can be found in the west wing of the building for the enrichment of the engineering programmes.



## IMAC Laboratory

The IMAC laboratory is dedicated for graphics, multi-media development and computer animation courses of the undergraduate and graduate students. It is equipped with 25 units of iMac and Specialized Multimedia Development software such as Maya.



## Networking Laboratory



This laboratory provides students enrolled in Data Communications and Networking Courses with access to the different Cisco and other networking equipment. The students learn how to design, build, manage, troubleshoot, and secure computer networks through various simulations and actual hands-on lab activities.

The networking laboratory is equipped with the following:

- 10 Cisco 1941 routers
- 3 Cisco 2811 routers



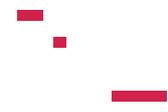
- 2 Cisco 2621 routers
- 4 Cisco 1751 routers
- 6 E900-ME Wireless-N Router
- 8 Cisco Stackable 3750 series switches
- 11 Cisco Catalyst 2960 series switches
- 13 V.35 Cable, DTE Male to Smart Serial, 10 Feet
- V.35 Cable, DCE Female to Smart Serial, 10 Feet
- 4 V.35 DTE Serial Cable, 10 Feet
- 4 V.35 DCE Serial Cable, 10 Feet
- 25 Intel Core 2 Duo Desktop PCs (Windows 7)
- Ethernet cables
- Cable-making and -testing equipment

### **Database Laboratory**



This laboratory is equipped with database software, particularly Oracle. Students are provided with hands-on experience in using database software, including MySQL and MS Access.





## STUDENT SERVICES

### **Guidance and Counseling**

The Guidance and Counseling gives the students the opportunity to discover their aptitudes and interests. The office has a staff that assists students adjust to university life, aid them towards self- knowledge and self-realization, and provide career counseling and continuing education.

### **Academic Advising**

Students are assigned to an Academic Advisor upon admission and enrollment in the University. The Academic Advisor helps the student in his study plan and monitors his academic performance and progress throughout this stay in the University.

### **Student Clubs and Organizations**

Student organizations include University Student Council, College Student Council, and other academic, and special interest organizations. Involvement in student organizations is important for a student in making new friends and provides the opportunity to share mutual interests with fellow students.

### **Orientation on University Policies, Offices and Support Offices**

Students are given an orientation on university policies found in the Student Handbook, and other rules and regulations of the University. The Orientation includes a campus tour and a brief visit to the different support offices that students will later interact with all throughout their campus life.

### **International Student Assistance**

International students are provided with an orientation that will keep them feel comfortable in their initial stay in the University. This will also assist them in meeting other students who came from the same cultural backgrounds that will facilitate them gradually to feel at home and eventually develop a sense of belongingness among other students.

### **Visa Assistance**

Foreign students, including transfer students, maybe provided assistance in the processing of their student visas should there be problems encountered upon their application to the University. The Admissions Office is responsible for providing them with the necessary information kit that they would need to accomplish needed for Visa processing.



## ADMISSION TO THE UNIVERSITY

### Admissions Criteria for Undergraduate Students

#### *I. For First Year Undergraduate Student Applicants*

Acceptance to the University depends on the following minimum admissions requirements:

1. Completely filled out admissions application form.
2. Minimum secondary school scores of 60% or its equivalent
3. Oxford Online Placement Test (Oxford Online Placement Test (OOPT)) Result (if needed)
4. Submission of all required documents stated in the Admissions Policy.

To be admitted to any undergraduate programme, the applicant must satisfy the minimum secondary school grades or its equivalent without the need to take the University placement test and remediation classes of English and Math, as shown in the following table:

<b><i>Subtest Component for Bahraini, KSA, Kuwait, Qatar, Yemen, Switzerland, USA, and Ecuador Qualification</i></b>		<b><i>Programme</i></b>		
		<i>BSME, BSEnE, BSIT, BSBI, BSAF</i>	<i>BSCS, BSIE</i>	<i>BSIB</i>
Mathematics	Science/ Technical/General Track	At least 70% or C	At least 70% or C	At least 60% or D
	Literature and Islamic Tracks	At least 80% or B	All must undergo remedial mathematics	At least 60% or D
Science		60	60	N/A



English	At least 80 or B	At least 80 or B	At least 80 or B
---------	------------------	------------------	------------------

\* This is applicable to Bahraini and similarly equivalent qualifications

<b>Subtest Component for Other Qualification (Indian, Pakistan, and West African)</b>		<b>Programme</b>		
		<i>BSME, BSEnE, BSIT, BSBI, BSAF</i>	<i>BSCS, BSIE</i>	<i>BSIB</i>
Mathematics	Science/ Technical/General Track	At least 51 or C1	At least 51 or C1	At least 41 or C2
	Literature and Islamic Tracks	At least 71 or B1	All must undergo remedial mathematics	At least 41 or C2
Science		60	60	N/A
English		At least 71 or B1	At least 71 or B1	At least 71 or B1

\*Note: Science component is subject to the evaluation of the Dean.

For the undergraduate applicant who did not meet the minimum required secondary school grades in Mathematics and English or its equivalent, his/her admission depends on the following criteria:

<b>Programme</b>	<b>Secondary School Grade</b>	<b>Oxford Online Placement Test (OOPT)</b>	<b>Remarks</b>
All Programmes	60-79 % grade in English	Score $\geq$ 55 %	No need for remediation in English
		Score < 55 %	Remediation in English
BSIE, BSCS	Literature and Islamic Tracks	N/A	Remediation in Math
BSME, BSEnE, BSIT, BSBI, BSAF	For Commercial Track: Score 60-79% in Math	NA	Remediation in Math
	For Scientific and technical Track: Score 60-69% in Math		
	For Science score <60%	NA	Tutorial class in general sciences
BSIB	Score <60% in Math	NA	Remediation in Math



All Programmes	CGPA < 60% for Bahraini and KSA CGPA < 41% for Indian and Pakistan	NA	Will be subjected to 5% admission rule of the University (As explained under note)
----------------	---	----	--

\*This is applicable to Bahraini and similarly equivalent qualification.

#### 1. Secondary Grade in English

A qualified applicant for all programmes, whose secondary school grade in English is within 60-79%, needs to take the placement test in English (OOPT). If the OOPT test result is 55 or above, an applicant will not take remediation courses in English. However, if the result is lower than 55%, applicant will take remediation course in English.

#### 2. TOEFL/IELTS

Qualified applicant who attains the score of at least 500 (173 CBT, 61 iBT) for TOEFL, or with a score of 5.5 for IELTS, is exempted to sit the required English placement test.

#### 3. Secondary Grade in Math

A qualified applicant for BSME, BSEnE, BSIT, BSBI, and BSAF programmes who has a secondary grade score in Math of 60-79% for commercial track and 60-69% for scientific and technical tracks and lower than 60% for the BSIB programme must take the remediation course in Math. All qualified applicants for BSCS and BSIE programmes coming from the literature and Islamic tracks must take the remediation course in Math.

Note: The University can accept new students equivalent to 5% of the total enrollment where student applicant has a CGPA below 60% but not lower than 50% from Bahraini Schools; below 41% but not lower than 33% from Indian and Pakistan Schools; and for other non-Bahrain based Schools, it will be based on the passing mark of the school. The 5% is subject to strict evaluation by the dean and the applicant's score in the OOPT and the secondary school grades.

#### 4. Secondary Grade in Science

A qualified applicant for BSME, BSIE, BSEnE, BSCS, BSIT, BSBI, and BSAF programmes who has a secondary grade score in science of lower than 60% must take tutorial class in general science before taking any university-level science course.

### **II. For Undergraduate Transfer Student Applicants**

Application Requirements:

1. Completely filled out admissions application form



2. Official Transcript of Records (TOR) from the university previously attended. Rules and regulations of the HEC-Bahrain regarding the authentication of foreign certificates and private school certificates are to be applied when necessary.
3. Course description of all completed courses for which transfer credit is sought (authenticated by the originating university).
4. Certificate of Transfer from the university previously attended stamped by MOE, if any.
5. Withdrawal Certificate stamped by the MOE.
6. Submission of all required documents stated in the Admissions Policy.
7. The applicant should have a good moral standing from the university from which he/she is transferring.

#### Admissions Requirements:

1. For Bahrain and KSA qualifications, the applicant should have at least a secondary school average of 60%. For non-Bahrain secondary qualifications (Indian and Pakistan) the applicant should have at least 41% secondary school average; and for other non-Bahraini qualifications please refer to the table of cut-off.
2. If the applicant has taken and passed courses in English or Mathematics in the previous university, the applicant will be exempted in taking the remedial courses in either English or Mathematics. The applicant may proceed to mainstream university courses and is eligible to apply for credit transfer.
3. If the applicant has not taken any courses in English, he/she shall take the OOPT. If the results on the two parts of OOPT are passed, he will proceed to university English courses, otherwise, he/she will enroll the remedial courses in English where he/she fails.
4. If the applicant has not taken any course in Mathematics, the basis for evaluation whether remedial course in mathematics is required or not is the score in mathematics subjects in his/her last year in the secondary school certificate using the table presented earlier.
5. The transfer of course credits is accepted at the University if courses applied for crediting are equivalent to the courses where credit will be transferred. Practicum (Internship) course is eligible for credit transfer with the same practicum (internship) course from other university or re-admitted student from the University.
6. The University requires the undergraduate student to complete at least 50% of the required credit units/hours of a programme in residence at the University. The maximum credit units/hours that are eligible for transfer credits should not exceed two-thirds (66%) of the required credit units/hours based on his/her original degree from another university.

### ***III. Admissions Criteria for Postgraduate Students***



**A. Acceptance to the programme as a new student depends on the following criteria:**

1. The Applicant should have a bachelor's degree with a minimum CGPA of 2.75 out of 4.0 or 2.0 out of 4.0.
2. For an applicant who is a graduate of any baccalaureate degree with a CGPA of 2.75 out of 4.00 or 2.00 out of 4.00 or better will be exempted from taking the Pre-MBA courses provided he/she has a minimum work experience of two years post his baccalaureate degree.
3. For an applicant who has a baccalaureate degree in business programme that was delivered in English will proceed to core courses:
  - If he/she has CGPA from B to A+ and will be exempted to take OOPT.
  - If he/she has a CGPA from C+ to B- will take OOPT and should get a passing score of at least 75 to proceed to core courses but if failed, applicant will proceed to pre-MBA courses.
  - If the applicant with CGPA of C-/C, will take pre-MBA courses.
4. Applicant who is not a graduate of a baccalaureate degree in business or if a graduate of business degree but not delivered in English will take pre-MBA courses.
5. The applicant should submit a certificate of at least one (1) year work experience or two recommendation letters from professors in undergraduate study in lieu of the work certificate.
6. The applicant should pass the personal interview conducted by a committee.
7. The applicant for letter b may also present a minimum score of 550 in TOEFL or 6.5 in IELTS as an equivalent of OOPT.

**B. Acceptance to the postgraduate programme as transfer students depends on the following criteria:**

The University requires as a matter of policy that a transfer postgraduate student is required to complete at least 50% of the required credit units/hours of a programme of residence at the University.

The maximum credit units/hours that are eligible for transfer credits should not exceed fifty percent (50%) of the required credits from the original degree from another university.

Capstone (Thesis) course is not eligible for credit transfer; the transfer student must take this course during his/her residency at the University.

**IV. Special Needs Applicants**

An applicant seeking admissions under this category needs to fulfill the same requirements for admissions as for the general candidates except for a





consideration of 5% marks in the cut off percentage. The Guidance Counselor provides information and assesses the needs of the student applicant and the adjustments that he/she might require for him/her to access his/her chosen programme at the University.

The special needs applicant must disclose the nature of disability during the application process and the University reserves the right to accept/deny his/her admissions as it sees fit based on the nature of the disability and University's existing support mechanisms.

## ***V. Appeal System for Access and Transfer from other University***

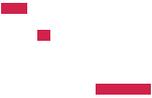
### **A. Appeal System for Access:**

1. An applicant may appeal the result of his/her admissions result to the University by submitting a letter of appeal to the Admissions Office.
2. The Admissions Officer discusses the appeal with the Dean of Student Affairs and considers the merits of the appeal based on the following:
  - Results of University Placement Test (OOPT); and
  - Secondary School Report.
3. The Dean of Student Affairs submits the recommendation to the College Dean who may request for additional interview, if necessary.
4. The College Dean decides on the appeal with due regard to the recommendation of the Dean of Student Affairs.
5. The Admissions Officer advises the applicant about the result of the decision of his/her appeal.
6. The Admissions Officer may advise the applicant to consider alternative programme of study other than the original choice.

### **B. Appeal System for Transfer of Credits from Other University:**

1. An applicant whose application for transfer of credits from previous university was denied may appeal the decision if he believes that there is a reasonable ground to appeal.
2. He/she must submit a letter of appeal to the Admission Office.
3. The Admission Office submits the appeal to the Deanship of Student Affairs.
4. The Dean of Student Affairs discusses the appeal with the concerned dean of the programme where the transfer of credit was applied for.
5. The Admissions Office informs the applicant on the final decision of the appeal.





# REGISTRATION

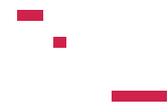
## Registration Procedure for New Students

1. The student secures plotting form from the Admissions Office and fills it out indicating courses to be enrolled and the schedule.
2. The student submits the accomplished plotting form to the Head of Admissions for verification and enlistment of the courses to be enrolled.
3. For Transfer student, the Head of Admissions refers the student to the Dean of the accepting College for evaluation of transcript and possible crediting of courses completed and advises him/her as to what courses he/she may enroll at the term.
4. The student goes back to the Admissions Office for enlistment of the courses advised by the College Dean.
5. The student proceeds to the Accounting Office for assessment of fees, payment, and printing of the Certificate of Registration (COR).

## Registration Procedure for Continuing Students

1. The student secures the plotting form from the Registration Office.
2. The student proceeds to designated enlistment area.
3. The student lists down required courses for the next term (as indicated in his/her Programme Plan) and chooses the schedule for the courses to enroll for the next term.
4. The student proceeds to the assigned academic adviser for evaluation and approval of the plotting form. Once approved, the student cannot change the plotting form without the permission of the adviser or the Dean of the College.
5. The student can enlist courses between 12 credit hours (minimum) and 19 credit hours (maximum) as per HEC regulation except if the student is graduating for the term wherein, he/she must take the remaining courses (if less than 12) and maximum of 21 units.
6. A student who is under probation can only enroll 12 credit units/hours.
7. The student proceeds to the Accounting Office for assessment and payment of fees, and printing of the Certificate of Registration (COR).
8. A student is not allowed to attend classes without the Certificate of Registration (COR). In case a student loses his registration form, he/she may request a re-print from the Accounting Office.
9. The student should ensure that his/her name is included in the class list of the course assigned to a faculty member by presenting his/her registration/payment proof to the instructor during the first session of the class.





## FEES AND PAYMENT

The fee structure is as follows:

<b><i>The schedule of fees is as follows:</i></b>	
Application Fee	<b>BD 25</b> (non-refundable, payable one time)
Registration Fee	<b>BD 50</b> (non-refundable, payable every term)
Undergraduate Fees	<b>BD 50</b> per unit/credit hour  <b>BD 51.500</b> per unit/credit hour (For new students beginning AY 2014-15)
Graduate Fees	<b>BD 87.500</b> per unit/ credit hour  <b>BD 90.125</b> per unit/ credit hour (For new students beginning AY 2014-15)
Graduate Thesis or Dissertation fee:	<b>BD 750</b> (non-refundable and paid upon registration of the Thesis Course)
Graduation Fee	<b>BD 150</b> (non-refundable, payable one time)

Fees are subject to change upon approval by the MOE.

The students pay a registration fee at the beginning of every trimester.

The University accepts the following methods of payment:

- Cash in Bahrain Dinars (BD)
- Checks drawn on local banks in BD (If two or more checks were returned due to insufficient funds, checks will no longer be accepted.)
- Direct transfers to the University bank account. (Name and ID number of the student must be noted on transfer)

All student financial transactions with the University are processed through the Accounting Office. Questions concerning student accounts should be directed to the Accounting Office.

### Methods of Payment

A student can pay his/her tuition and other fees in cash during the scheduled enrolment period, which is until the last day of late registration. Partial payment is also available. The student should arrange the type of payment with the Accounting Office.

<b>Other Fees</b>	
Transcript of records and Certificate (2 <sup>nd</sup> copy)	BD3.000
Term Fee for Residence	BD50.000



Other Fees	
IC Fee	BD50.000
Lost Permit	BD2.000
Lost ID	BD5.000
Reprint COR	500 Fills

### Tuition Fee Refund\*

Withdrawal of enrollment is allowed until the day before the Midterm examinations. However, charges will be based on the date of filing the withdrawal form at the Accounting Office whether the student has attended classes.

Refunds are governed by the University regulations as stipulated in the Student Handbook. All refund requests will be processed within 30 days.

If the student withdraws from the University or from an enrolled course/s during the trimester, refunds of tuition and fees will be calculated accordingly:

### Withdrawal from the University

Date of Filing	Refund
Before the start of classes	100% refund of TOTAL FEES (Tuition and Miscellaneous fees excluding registration fees)
Within the first week of classes	90% of the TOTAL FEES (Tuition and Miscellaneous fees excluding registration fees)
Within the second week of classes	80% of the TOTAL FEES (Tuition and Miscellaneous fees excluding registration fees)
After the second week of classes	No Refund

**Note:** Refund applies only to paid tuition and fees. Registration and application fees are non-refundable.



# ACADEMIC POLICIES

## Academic Load

Students are required to maintain full-time status except during the terminal trimester when they are allowed to enroll the only remaining courses to complete the academic requirements of the programme.

## Undergraduate Student Load

The regular load for the undergraduate is 15-19 credit units/hours per trimester. The minimum load is twelve (12) credit units/hours per term and the maximum is nineteen (19) credit units/hours per trimester, ***except for those who intend to run for honors*** in which case the minimum load should be ***at least 15 units/hours per trimester***.

## Graduate Student Load

The minimum and maximum load per trimester for graduate students is six (6) to twelve (12) credit units/hours in each trimester. ***However, for those who wish to run for academic honors, the minimum load is six (6) credit units/hours per trimester***, except on the terminal trimester of the programme.

## Adding and Dropping of Course

- A student is allowed to change his/her schedule until the last day of add/drop period (refer to the Academic Calendar).
- A student secures adding/dropping form from the Dean and lists down course/s that he/she wishes to add and/or drop.
- A student must complete the adding/dropping of courses until the last day of add/drop period without penalties, provided the changes are approved by the Dean. Changing of course schedule is classified either by: adding courses, or dropping courses, or dropping courses and replacing with another course;
- A student confirms all the subjects added and/or dropped at the Accounting Office.
- After the last day of add/drop period, NO student is allowed to change the class schedule.

## Prerequisite of Courses

A student is not permitted to take an advanced course until the student has satisfactorily passed the prerequisite course(s). A student is not allowed to enroll advanced courses in the higher level unless he/she passes all the required courses in a particular level. Request for waiver of prerequisite, however, may be approved based on its merit.

## Leave of Absence





Students may interrupt continuous enrollment by opting to take a leave of absence from the University for medical or personal reasons or to engage in other off-campus educational experiences without dismissal from the University.

A student is allowed to file a leave of absence (LOA) from the University until the last day of late enrolment. The LOA will be reflected in the official transcript of records. If the student did not register and failed to submit the approved LOA form, the student will be included in the absence without leave (AWOL) list. A student on LOA may not participate in the co-curricular or extra-curricular activities during the duration of the LOA.

The student must ensure that filing the LOA will not result to being an inactive student. He/she shall be advised to see the Registrar for verification of status. The student becomes inactive when he/she has not registered for consecutive two (2) years (for undergraduate) and one (1) year (for graduate). Hence, the student shall be advised to secure the transfer credentials.

### **Shifting to another Programme**

Shifting or transferring to another programme is allowed. All equivalent courses will be credited towards the new programme. The Registration Office shall furnish the student with a copy of the credited courses under the new programme.

### **Transfer Credit Policy**

The University requires, as a matter of policy, that a transfer student is required to complete at least 50% of the required credit units/hours of a programme of residence at the University.

The maximum credit units/hours that are eligible for transfer credits should not exceed two thirds (66%) for undergraduate programme and not exceed half (50%) for graduate programme of the required credit units/hours from the original degree of another university. The Thesis/ Capstone courses are not eligible for credit transfer. The transfer student must take these courses during his/her residency at the University.

### **Minimum Programme Completion**

#### **For undergraduate programmes**

- An undergraduate student must spend at least ten (10) trimesters as a regular student at the University to be eligible for the bachelor's degree.
- It is expected that an undergraduate student will spend about four (4) years enrolled as a regular student to earn a bachelor's degree.
- The time spent at another institution combined with the time spent at the University must at least be equal to at least ten (10) trimesters as a regular student.



## For graduate programmes

A graduate student must spend at least five (5) trimesters at the University to be eligible for the master's degree.

### Maximum Registration Rule

Unless a programme specifies otherwise, the maximum time to complete a degree for undergraduate student is:

- Eight (8) years including all approved leave of absences.

For graduate student, the maximum time-to-complete a degree is:

- Eight (8) years including all approved leave of absences.

A student who has not completed the degree requirements within the maximum time limit is not allowed to continue in the programme started at the University.

### Attendance and Tardiness

Students are required to attend classes regularly.

### Absences

- A student must meet attendance of at least 80% (20% absences) throughout the trimester of the required total number of laboratory and lecture hours. A student in violation of the attendance policy will be given a grade of Dropped (DR) for the courses where the absences were incurred.
- A student who is dropped due to violation of attendance will not be allowed to take the final examinations.
- An acceptance of valid excuse will not nullify the absence but will cancel any penalties normally imposed for absence at term exams, submission of projects, etc. (refer to special exam policy)
- Warnings are issued to a student regardless of the reason for the absences.
- A student will receive warnings from his/her teachers when the absences have reached 10% and before his/ her absences reached 20% of class time given for a course.

### Absence with excuse

The absence of a student in the following cases is considered absence with an excuse and is not included in calculating the percentage of absences:

- Representing the government on an official mission.
- Representing the university or the country by taking part in sports competitions, academic competitions, skills competitions; and
- Call of duty in the Defense Force or Police.



The student must substantiate by evidence that the activities are contributing to the general welfare of the Kingdom of Bahrain in general and the university in particular.

## Grading System

### Grade Computation

All courses are graded based on planned assessments which may include examinations, term projects, assignments, cases, or laboratory reports. Equivalency between numeric grades (quality points) and letter grades are as follows:

95-100	<b>4.00</b>	<b>A+</b>	Excellent
91-94	<b>3.89</b>	<b>A</b>	Very Good
87-90	<b>3.67</b>	<b>A-</b>	Very Good
83-86	<b>3.33</b>	<b>B+</b>	Good
79-82	<b>3.00</b>	<b>B</b>	Good
76-78	<b>2.67</b>	<b>B-</b>	Good
73-75	<b>2.33</b>	<b>C+</b>	Fair
70-72	<b>2.00</b>	<b>C</b>	Fair
64-69	<b>1.67</b>	<b>C-</b>	Fair
57-63	<b>1.33</b>	<b>D+</b>	Satisfactory
50-56	<b>1.00</b>	<b>D</b>	Satisfactory
Below 50	<b>0.00</b>	<b>F</b>	Failed
	<b>IC</b>	<b>IC</b>	Incomplete
	<b>IP</b>	<b>IP</b>	In Progress
	<b>W</b>	<b>W</b>	Withdrawn
	<b>DR</b>	<b>DR</b>	Dropped
	<b>NG</b>	<b>NG</b>	No Grade

**IC - Incomplete.** This grade shall be given at the end of the term when all, but a minor portion of the course work has been satisfactorily completed. (e.g. missed term or final exams, none submission of a major project or research requirement, etc.)

**IP - In-Progress.** Conditional grade given to undergraduate student who failed to submit course requirement(s) such as hardbound thesis, design projects, WBL completion certificates, or other terminal report(s) required by the course.

**W - Withdrawn.** Mark given to all courses currently enrolled by the student who officially withdrawn from the university before the 8<sup>th</sup> week of the trimester regardless of the academic standing of the student.

**DR - Dropped.** Mark given to a course(s) currently enrolled but was/were officially dropped by the student before the 8<sup>th</sup> week of the trimester (Midterm Period) regardless of the academic standing of the student in the particular course.



**NG - No Grade.** Conditional grade for MBA Thesis, wherein the student failed to complete the thesis within one year.

## **Grade Point Average (GPA)**

It is the policy of the University to assess and evaluate the academic performance of the students by means of objective measure that reflects their academic achievement on a trimester basis (GPA) and continuous basis (CGPA).

## **Computation of GPA and CGPA**

Only grades in academic courses required for the completion of the programme are included in the computation of either the trimester GPA or the cumulative GPA (CGPA). Any grades earned by students from previous university (for transferee) is not included in the GPA and CGPA computations.

### **1. Computation of GPA**

- a. Multiply the credit of each course by the corresponding grade points merited in each course to get the honor points.
- b. Add all the honor points to get the total.
- c. Divide the total points by the total number of credit units during the trimester; and
- d. Indices are computed to four decimal places rounded off to two.

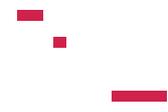
### **2. Computation of CGPA**

- a. CGPA is computed in the same manner as the GPA except that it includes all courses taken from the first term the student enrolled his/her first courses to the university up to the current trimester.
- b. If the course is repeated, only the new grade is included in the computation of the CGPA and not the previous grade.
- c. The previous grade of a repeated course is changed to "R".
- d. For student who shifted /changed their programme within the University, only courses that are credit to the new programme are included in the computation of CGPA.

## **Course Retake**

The student is allowed to retake a compulsory course that he/she failed (zero credit) in the previous trimester to become eligible for graduation. For general education courses, the student is allowed to retake the course for a maximum of five times while three times for professional courses. Moreover, the student may retake any course where he/she previously earned credits to improve his/her CGPA.





In both cases, the new grade is included in the calculation of the cumulative PA and not the previous grade.

## **Grade Appeals**

Grade complaints will be entertained only within the period of one week after the posted schedule for grade distribution. Grade complaints will not be entertained after the said period. A grade complaint must be received by the Office of Student Services (OSS) not later than the last day for filing grade complaints. Students must ensure that there is valid basis for the grade complaint.

## **Academic Standing**

### **Undergraduate Students**

To be considered in good academic standing, an undergraduate student must maintain a GPA of at least “C” every term and a CGPA of at least “C”.

### **Graduate Students**

To be considered in good academic standing, a graduate student must maintain a GPA of at least “B” every term and a CGPA of at least “B”.

A student must be in good academic standing to be eligible for graduation.

## **Scholastic Delinquency for Undergraduate Students**

### **Student Notice**

An undergraduate student who fails in 50% of the total units enrolled in the term will be classified as under Student Notice. The student will receive a written reminder from the College Dean for the student to improve his/her academic performance in the following term.

A student is issued a STUDENT NOTICE by the College Dean if the CGPA for the term is at least 2.01 and passed in 50% of the total units enrolled for the term.

### **Academic Probation**

A student with CGPA of at least 2.01 and failed in 75% of the total units enrolled in the term will be classified as under **Academic Probation** and will be placed on the PROBATIONARY status list.

- A student who has received STUDENT NOTICE for two consecutive terms will also be placed on the PROBATIONARY status list.
- A student is issued an ACADEMIC PROBATIONARY Notice by the College Dean.



- A student placed under PROBATIONARY status will be allowed to 12 credit units/hours in the succeeding term to improve the academic performance.
- A student will be removed from the PROBATIONARY status list upon passing at least 75% of the total units enrolled in the succeeding term and obtaining a CGPA of 2.0 or C or better.

### **Dismissed Status**

A student with a GPA of 0.00 or failed in 100% of the total units enrolled in the term will be ***dismissed from the University.***

A student who received PROBATION NOTICE for two consecutive terms will also be dismissed from the University.

- A dismissed student may submit an appeal for re-admission. After evaluation and if the Dean finds merit in the appeal, the letter will be recommended for approval of the VP of Academic Affairs.
- A re-admitted student will be allowed to enroll 12 units in the succeeding term.
- A student with denied re-admission appeal will be advised to transfer to other institutions and will be given honorable dismissal and transcript of record after all University clearances are accomplished.

### **Scholastic Delinquency for Graduate Students**

#### **Academic Probation**

- A graduate student incurs a failing mark (F) in at least one course enrolled in one term will be under academic probation.
- A graduate student who incurs a GPA below 3.0 or B in any trimester will be under academic probation. Thus, the minimum grade that a graduate student should get in any enrolled course is C, but the student is required to maintain a GPA of at least 3.0 or B to be of good academic standing.

#### **Double Academic Probation or Dismissed Status**

A graduate student who is under academic probation and incurs a failing mark (F) in at least one course enrolled in any succeeding term will be under double probation and will be dismissed from the programme.

#### **Academic Honors**

##### **A. Graduation with Honors**

The University awards academic honors at graduation. To qualify for the awards, a student must have achieved the required cumulative GPA and these are:

Distinction with First Class  
Distinction with Second Class

Cumulative GPA of 3.90 – 4.00  
Cumulative GPA of 3.70 – 3.89



Distinction

Cumulative GPA of 3.50 – 3.69

Conditions:

1. The award is noted on the transcript of the student awardee.
2. The award is given to both undergraduate and graduate students regardless of credit hours registered every trimester.
3. No record of any disciplinary actions or violations of the Student Code of Conduct.
4. The award is granted to a student who has achieved the required credit units prescribed by the University and or the Higher Education Council.

## **B. Academic Excellence**

To qualify for academic excellence, the student must have:

1. CGPA of at least 3.33 (new system)/ 1.75 (old system).
2. Enrolled at least 12 units per trimester.
3. No grades lower than 1.33 (new system)/ 2.75 (old system).
4. No academic violation;
5. No involvement in any form of conduct violation; and
6. No grade lower than B from previous university attended (if applicable);
7. No grade of DR or W in any course.

## **Non-Academic Awards**

### **A. Best in Thesis /Design Project / Capstone Project Award**

The award is given to an undergraduate student whose terminal project/thesis grade ranks highest in the graduating class of each programme. There will be one award per programme.

### **B. Best Graduate Thesis Study**

The award is given to a graduate student whose Graduate Thesis grade ranks highest in the graduating class for each programme.

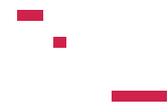
### **C. University Leadership Award**

This award is given to the student who demonstrated leadership qualities in all activities, academic and non-academic programs, and events at the University.

## **Eligibility for Degree and Graduation**

Students will be conferred with their respective degrees and titles if they satisfactorily completed all academic requirements of their registered programme. Bases for evaluation are academic records available at the Registration Office.





List of students who are candidates for gradation will be posted at the Registration Office at the start of the academic year, specifically in September.

#### Procedure for Confirmation of Graduation Eligibility

1. The Registration Office accepts of application for graduation two weeks after the release of the grades;
2. The students apply for graduation by filling out a form available at the Registration's Office;
3. The Registration Staff evaluates the scholastic records and other requirements for graduation;
4. The Registration Office posts the list of candidates for graduation categorized according to students without deficiency and students with deficiency. If the student is found to have any deficiency, he/she will be advised to take the course in the immediate term for re-evaluation for eligibility for graduation in the next term;
5. The Registration Office forwards records for graduation to the Auditor. If there are exceptional cases, the Registration Head refers the matter to the Dean of Student Affairs who decides depending on the merit of the case.
6. The Academic Council conducts the deliberation for graduation. It sees to it that the courses were successfully passed with a minimum of CGPA of 2.0 (for undergraduate) and 3.0 (for graduate) and other requirements completed to confirm graduation;
7. The Registration Office prepares the final list of the graduating students as soon as the Academic Council completes its task.
8. Students who are confirmed to be eligible for graduation accomplish a clearance form and completes the clearance procedures for the release of his/her certificate, diploma, and transcript of records.





## STUDENT RIGHTS AND RESPONSIBILITIES

All members of the University community are entrusted with academic integrity, which encompasses the fundamental values of honesty, trust, respect, fairness, and responsibility.

As members of the academic community, students have both rights and responsibilities. The University allows its students to make their own decisions and assume full responsibility for the consequences of their actions. The rights and responsibilities outlined below are designed to protect the rights, safety, and property of all members of the University.

- All students have the right to quality instructions under conditions conducive to learning and research.
- All students have the right to equal opportunity and equal access to academic programmes and academic resources and open intellectual inquiry.
- Students have the right to be represented in the different Institutional and College committees/councils and participate in the institutional decision – making. Students have the right to voice out their opinion about the University and participate in the annual student satisfaction survey and trimester course and faculty evaluation.
- All students have the right to academic freedom that allows them to freely express their views while respecting the rights and freedom of others.
- Recognized Student organizations/clubs have the right to conduct group meetings inside the University building. They can hold activities inside the University and invite guest speakers from outside the University to speak during the activity subject to approval of the faculty/staff advisor and the head of OSS and DSA.
- Each student has the right to check and review and discuss with their teachers their academic records such as course grades, graded assignments, projects, research, reports, term examinations, record of attendance and other work submitted by the student, evaluated by the faculty handling the course and included in determining the final grade in the course.

The most important of the responsibilities is to respect the rights of other members of the academic community and to conform to standards essential to the purposes and processes of the University.

It is the responsibility of the student to be prepared, prompt, attentive, and courteous in the classroom and conform to policies set by the faculty member to maintain academic decorum.

Students, faculty, and staff are expected to help maintain the quality and integrity of the educational process by conducting themselves in a truthful and ethical manner.

Any violation of academic integrity represents an erosion of academic standards and should not be tolerated by the faculty or the student. Knowledge of any violations should be reported and dealt with through established policies and procedures.





## **Student Code of Conduct**

The University is committed to the educational and personal growth of its students. Behavior that infringes upon rights, safety, or privileges or that impedes the educational process is unacceptable and may lead to sanctions up to and including dismissal from the University. (Complete list of offenses and corresponding sanctions are discussed in the section for Student Discipline of the Student Handbook)

## **Authority for Student Discipline**

The ultimate authority for all University policy is vested in the President the University. Non-academic disciplinary authority is delegated to the Dean of Student Affairs, who implements student conduct policies and takes all necessary and appropriate action to protect the safety and well-being of the students in the campus community.

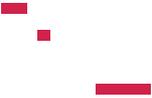
A Student Disciplinary Tribunal, composed of student, faculty, non-teaching staff and representatives is created by the Head of Student Services to ensure just, speedy, and constructive resolution of problems arising from infractions of the student code of conduct. The committee considers the complaints, conducts hearing, and recommends resolutions or appropriate sanctions.

## **Faculty Authority**

The authority and responsibility to implement academic honesty and impose disciplinary measures is vested to the faculty member assigned to teach a course.

Cases resulting from alleged violations of the University's academic honesty policy are within the jurisdiction of either a faculty member or the dean of a college in which the alleged violation has occurred. However repeated violation of established academic policies is subject to filing of a formal complaint to the Student Disciplinary Tribunal for the conduct of hearing, deliberation, and assignment of appropriate sanction.





## ACADEMIC PROGRAMMES

The University offers baccalaureate degrees that respond to regional needs of the Kingdom of Bahrain and the Gulf region, drawn upon the regional strengths, and prepare graduates to participate successfully in communities in the region and around the globe. It has three colleges that cater to the education training needs in business, computer science, and engineering.

UTB graduates will be able to:

- Demonstrate specialized knowledge, skills, and competencies in their chosen fields of study and apply this ethically in real-life contexts
- Plan and undertake projects or research and develop reasoned and creative solutions
- Develop a variety of intellectual skills, including analytic inquiry, information literacy, diverse perspectives, and quantitative fluency in drawing reasonable conclusions
- Communicate effectively, using academic and professional conventions, both orally and in writing, to diverse audiences
- Collaborate positively with others to achieve a common purpose

### **College of Administrative and Financial Sciences (CAFS)**

- Bachelor of Science in Business Informatics (BSBI)
- Bachelor of Science in International Business (BSIB)
- Bachelor of Science in Accounting and Finance (BSAF)
- Master of Business Administration (MBA)

### **College of Computer Studies (CCS)**

- Bachelor of Science in Computer Science (BSCS)
- Bachelor of Science in Information Technology (BSIT)

### **College of Engineering (COE)**

- Bachelor of Science in Informatics Engineering (BSIE)
- Bachelor of Science in Mechatronics Engineering (BSME)
- Bachelor of Science in Environmental Engineering (BSEnE)



	Doc. No.	QR-AAD-018
	Issue No.	01
College/Department: College of Administrative and Financial Sciences	Revision No.	03
<b>BSBI PROGRAMME SPECIFICATION 2021-2022</b>		Page <b>42</b> of <b>226</b>

<b>1. Teaching Institution</b>	University of Technology Bahrain
<b>2. University Department</b>	College of Administrative and Financial Sciences (CAFS)
<b>3. Programme Title</b>	Bachelor of Science in Business Informatics (BSBI)
<b>4. Title of Final Award</b>	Bachelor of Science in Business Informatics
<b>5. Modes of Attendance offered</b>	Actual classroom learning-interactive
<b>6. National Qualification Framework Level and Credits</b>	NQF Level 8 540 NQF Credits (180 ACS Credits)
<b>7. Accreditation</b>	European Council for Business Education (ECBE)
<b>8. Other external influences</b>	<p><b>Local External Influences/ References</b></p> <p>Ministry of Education (MOE), Higher Education Council (HEC) Education and Training Quality Authority (BQA) Bahrain National Qualification Framework (NQF)</p> <p><b>International External Influences/References</b></p> <p>European Council for Business Education Standards (ECBE) ACM/AIS Curriculum Guidelines QAA-UK Subject Benchmark Statement: Computing 2019 QAA-UK Subject Benchmark Statement for General Business and Management 2019</p>
<b>9. Date of production / revision of this specification</b>	September 1, 2021
<b>10. Aims of the Programme</b>	
<p>The Bachelor of Science in Business Informatics (BSBI) programme provides in-depth knowledge and skills required to understand, analyze, evaluate, implement, use, and manage information systems in organizations. It produces graduates with solid business background who understand the role of information technology in improving efficiency and effectiveness of operations in organizations and who develop and execute the capability of providing IT solutions to meet specific business needs.</p> <p><b>Programme Educational Objectives:</b> Graduates of the programme, three (3) to five (5) years after graduation, shall be able to:</p> <ol style="list-style-type: none"> <li>1. Possess expertise in systems thinking in order to develop and manage information and communications technology (ICT) solutions which enable enterprise development and business process improvement and innovation.</li> <li>2. Engage in business informatics careers and/or be a responsive member of a business organization and society with awareness of professional ethics, responsibilities, values, and standards.</li> <li>3. Transfigure knowledge, understanding and academic skills through postgraduate study and/or continuing professional development.</li> </ol>	
<b>11. Learning Outcomes, Teaching, Learning and Assessment Methods</b>	



Upon successful completion of the programme, the student will be able to:

1. Demonstrate advanced knowledge and skills in the practical and logical foundations of informatics and the business functional areas and their processes.
2. Demonstrate critical knowledge and understanding impact of technology and information systems and skills necessary to implement and manage information systems used in business operations.
3. Use advanced and some specialist level skills to develop, design and test information systems to enhance all facets of business, aiding in decision-making and support of business processes and applications
4. Use a range of approaches to critically analyze and evaluate data and information in formulating solutions to business problems and issues.
5. Utilize specialist-level skills in dealing with complex business situations and problems through IT projects, research, and in improving and innovating business processes and organizational systems.
6. Apply a range of approaches to critically analyze and evaluate information systems, applications and business models to business environment situations and implement relevant solutions.
7. Communicate effectively, with a range of audiences in presenting information and projects with the use of appropriate tools, techniques, and technology.
8. Operate and function effectively an individual or groups with the need for engagement in life-long learning; and promote ethical and professional behavior in organizations and society.

#### **Teaching and Learning Methods**

1. Constructive Method. Learners must be fully engaged and active in the process of constructing meaning and knowledge based on their prior knowledge and experiences through the process of doing, making, writing, designing, creating, and solving. It allows teachers to implement differentiated learning, authentic assessment practices and incorporate technologies to improve individual learning experiences. It includes simulations, in-course projects, field trips, digital content, group discussions and reflections. This method strives to improve achievement by consciously developing learners' ability to consider ideas, analyze perspectives, solve problems, and make decisions on their own thereby making them more responsible and independent.
2. Inquiry based Method. Learners develop cognitive skills like critical thinking and problem solving by working on questions, problems, or scenarios and formulate creative solutions. The teachers use either structured, guided, or open inquiry to facilitate learning. As a process, learners are involved in their learning by formulating questions, investigating, building their understanding, and creating meaning and new knowledge on a certain lesson. Typical activities include laboratory sessions and research-based activities.
3. Collaborative Method. Learners are divided into small groups to learn something together and capitalize on one's other resources and skills, evaluating one another ideas, and monitoring one another's work. It allows students to actively interact by sharing experiences and take on different roles. Typically, students are provided with problems or projects that they work on together to search for understanding, meaning, or solutions and each group is expected to work together developing or formulating solutions and present the solution in class. The activities include think-pair-share, jigsaw, or round-robin which effectively engage students to complete the tasks.
4. Experiential learning method is the process of learning by doing. By engaging students to hands on experience which attempts to apply theories and knowledge learned in the classroom to real-world situations. This may include team challenges, simulations, company visits/fieldworks and other extracurricular activities. Experiential learning opportunities exist in a variety of course- and non-course-based forms and may include community service, service-learning, undergraduate research, study abroad, and culminating experiences such as internships, student teaching, and capstone projects.

#### **Assessment Methods**

- Assessment is done independently for each course. Variety of assessment tools will be used to assess achievement of intended learning outcomes including but not limited to major exams, assignments, case analysis and presentations, including capstone project, practicum, and indirect assessment.

## 12. Programme Structure

### BACHELOR OF SCIENCE IN BUSINESS INFORMATICS (BSBI)

CURRICULUM PLAN EFFECTIVE SY2021-2022

#### REMEDIAL CLASSES

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
MATH300	Remedial Mathematics	3	0	0	
ENGL301	Speaking and listening	9	0	0	
ENGL302	Grammar and Vocabulary	9	0	0	
<b>Total Units</b>				0	

#### FIRST YEAR ATTENDANCE

##### FIRST TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENGL401	English Communication Skills1	3	0	3	
HIST400	History of Bahrain and the GCC Region	3	0	3	
MATH401	College Algebra	3	0	3	
SOCI400	Sociology	3	0	3	
BUSI615	Principles of Management	3	0	3	
COMP613	Fundamentals of Information Systems	3	0	3	
EUTH400	Euthenics 1	1	0	0	
<b>Total Units</b>				<b>18</b>	

##### SECOND TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENGL402	English Communication Skills 2	3	0	3	ENGL401
BUSI621	Organizational Behavior	3	0	3	
BUSI622	Financial Accounting 1	2	2	3	
BUSI633	Microeconomics	3	0	3	
BSBI625	Principles of Banking and Finance	3	0	3	
COMP623	Business Information Systems	2	2	3	
EUTH401	Euthenics 2	1	0	0	EUTH400
<b>Total Units</b>				<b>18</b>	



**THIRD TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ARAB400A	Arabic Language	3	0	3	
ENGL403	Speech and Oral Communication	3	0	3	ENGL402
HUMR400	Human Rights	3	0	3	SOCI400
BUSI631	Principles of Marketing	3	0	3	
BUSI632	Human Resource Management	3	0	3	BUSI621
BUSI713	Macroeconomics	3	0	3	BUSI633
<b>Total Units</b>				<b>18</b>	

**SECOND YEAR ATTENDANCE****FIRST TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENGL502	Technical Writing	3	0	3	ENGL403
MATH403	Business Statistics	3	0	3	MATH401
BUSI711	Managerial Accounting 1	3	0	3	BUSI622
BSBI711	Bahrain Business Environment & Cross-Cultural Management	3	0	3	
COMP711	Introduction to E-Commerce	3	0	3	COMP613
COMP712	Computer Programming1	2	2	3	COMP613
<b>Total Units</b>				<b>18</b>	

**SECOND TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENVM400	Environmental Management	3	0	3	
BUSI721	Quantitative Methods	3	0	3	MATH403
BUSI712	Mathematics of Investment	3	0	3	MATH401
COMP721	Database Management Systems	2	2	3	COMP712
COMP722	Human-Computer Interaction	3	0	3	COMP711
COMP723	Computer Programming 2	2	2	3	COMP712
<b>Total Units</b>				<b>18</b>	

**THIRD TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BSBI731	Research Methods	3	0	3	MATH403
BSBI732	Technopreneurship	3	0	3	BUSI631
BSBI733	Financial Management	3	0	3	BSBI625
COMP731	Systems Analysis and Design 1	2	2	3	COMP721
COMP732	IT Infrastructure	3	0	3	COMP711
COMP733	Mobile Application Development	2	2	3	COMP723
<b>Total Units</b>				<b>18</b>	



### THIRD YEAR ATTENDANCE

#### FIRST TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BUSI811	Islamic Banking and Finance 1	3	0	3	BSBI733
BSBI812	Business Process Management	2	2	3	COMP721
BSBI813	Bahrain Business Law and Taxation	3	0	3	BSBI711
COMP811	Systems Analysis and Design 2	2	2	3	COMP731
COMP812	IS Strategy, Acquisition and Management	3	0	3	COMP732
BSBI814	Elective1	3	0	3	3 <sup>rd</sup> Year Standing
<b>Total Units</b>				<b>18</b>	

#### SECOND TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BSBI821	Operations Management	3	0	3	BUSI721
COMP821	Information Management, Security, and Support	3	0	3	COMP732
COMP822	Web Design and Development	2	2	3	COMP731
COMP823	Project Management	2	2	3	COMP812
COMP824	Data Mining & Warehousing	2	2	3	COMP721
COMP825	FinTech	3	0	3	BSBI733
<b>Total Units</b>				<b>18</b>	

#### THIRD TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BSBI831	Digital Marketing	3	0	3	COMP711
BSBI832	Business Planning	3	0	3	COMP823
BSBI833	BSBI Capstone Project A	3	0	3	COMPLETED 144 Units
BUSI831	Business Analytics	2	2	3	BUSI721, COMP824
COMP832	Enterprise Systems Management and Applications	2	2	3	BSBI812
COMP833	Elective 2	2	2	3	3 <sup>rd</sup> Year Standing
<b>Total Units</b>				<b>18</b>	

### FOURTH YEAR ATTENDANCE

#### FIRST TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BSBI841	Business Ethics	3	0	3	COMP812
BSBI842	Business Informatics Internship	0	12	6	4 <sup>th</sup> Year Standing
BSBI843	BSBI Capstone Project B	3	0	3	BSBI833
COMP841	Cloud Computing	3	0	3	COMP821
COMP842	Elective 3	3	0	3	3 <sup>rd</sup> Year Standing
<b>Total Units</b>				<b>18</b>	

#### ELECTIVES



Course Code	Course Title (Any three (3) among the following electives)	Units
	<b><i>Elective 1 (Any One Course from Business Component)</i></b>	
	Business Innovation	3
	Strategic Management	3
	Supply Chain Management	3
	<b><i>Elective 2 &amp; Elective 3 (Any Two Courses from Informatics Component)</i></b>	
	Multimedia Development	3
	Open Source Software	3
	Computing Trends	3
	Accounting Information Systems	3

### 13. Awards and Credits

<b>Degree/ Certificate Awarded</b>	Bachelor's Degree
<b>Total Units for Degree</b>	180
<b>Total Trimesters Completed</b>	10

### 14. Personal Development Planning

1. Periodic in-house trainings and peer mentoring related to subject specialization.
2. Attendance of faculty members to local and international conferences, seminars and trainings related to their fields of specialization.
3. Support faculty members to conduct research projects and publish research outputs aligned to college research thrusts and priorities.
4. Establish partnerships and linkages where research collaborations can be made.

### 15. Admission Criteria

Admission to University of Technology Bahrain (UTB) is open to all qualified applicants. Acceptance to the University depends on the following criteria:

#### A. For First Year Undergraduate Applicants

Acceptance to the University depends on the following admissions requirements:

1. Completely filled out an admission application form.
2. Minimum secondary school scores 60% or its equivalent.
3. Online Placement test (Oxford Online Placement Test (OOPT)) Result (if needed)
4. Submission of all required documents stated in the Admissions Policy.

To be admitted to any undergraduate programme, the applicant must satisfy the minimum secondary school grades or its equivalent without the need to take the remediation classes of English and Math, as shown in the following table:



<b>Subtest Component for Bahraini, KSA, Kuwait, Qatar, Yemen, Switzerland, USA, and Ecuador Qualification</b>		<b>Programme</b>		
		<i>BSME, BSEnE, BSIT, BSBI, BSAF</i>	<i>BSCS, BSIE</i>	<i>BSIB</i>
Mathematics	Science/ Technical/General Track	At least 70% or C	At least 70% or C	At least 60% or D
	Commercial Track	At least 80% or B	At least 80% Or B	At least 60% or D
	Literature and Islamic Tracks	At least 80% or B	All must undergo remedial mathematics	At least 60% or D
Science		60	60	N/A
English		At least 80 or B	At least 80 or B	At least 80 or B

\*This is applicable to Bahraini and similarly equivalent qualification

<b>Subtest Component for Other Qualification (Indian, Pakistan, and West African)</b>		<b>Programme</b>		
		<i>BSME, BSEnE, BSIT, BSBI, BSAF</i>	<i>BSCS, BSIE</i>	<i>BSIB</i>
Mathematics	Science/ Technical/General Track	At least 51 or C1	At least 51 or C1	At least 41 or C2
	Commercial Track	At least 71 or B1	At least 71 or B1	At least 41 or C2
	Literature and Islamic Tracks	At least 71 or B1	All must undergo remedial mathematics	At least 41 or C2
Science		60	60	N/A
English		At least 71 or B1	At least 71 or B1	At least 71 or B1

\*Note: Science component is subject to the evaluation of the Dean.

For the undergraduate applicant who did not meet the minimum required secondary school grades in Mathematics, Science and English or its equivalent, his/her admissions depends on the following criteria:

<b>Programme</b>	<b>Secondary School Grade</b>	<b>Placement Test in English (OOPT)</b>	<b>Remarks</b>
All Programmes	60-79 % grade in English	Score $\geq$ 55 %	No need for remediation in English
		Score < 55 %	Remediation in English
BSIE, BSCS	Literature and Islamic Tracks	N/A	Remediation in Math



	Commercial Track: Score 60-79%	N/A	Remediation in Math
BSME, BSEnE, BSIT, BSBI, BSAF	For Commercial Track: Score 60-79% in Math For Scientific and technical Track: Score 60-69% in Math	N/A	Remediation in Math
	For Science score <60%	N/A	Tutorial class in general sciences
BSIB	Score <60% in Math	N/A	Remediation in Math
All Programmes	CGPA <60% for Bahraini and KSA CGPA <41% for Indian and Pakistan	N/A	Will be subjected to 5% admission rule of UTB (As explained under note)

\*This is applicable to Bahraini and similarly equivalent qualification

a. Secondary Grade in English

A qualified applicant for all programmes whose secondary school grade in English is within 60-79%, needs to take the placement test in English (OOPT). If the OOPT test result is 55 or above, applicant will not take remediation course in English. However, if the result is lower than 55, applicant will take remediation course in English.

b. TOEFL/IELTS

Qualified applicant who attains the score of at least 500 (173 CBT, 61 iBT) for TOEFL, or with a score of 5.5 for IELTS, is exempted to sit the required English placement test.

c. Secondary Grade in Math

A qualified applicant for BSME, BSEnE, BSIT, BSBI, and BSAF programmes who has a secondary grade score in Math of 60-79% for commercial track and 60-69% for scientific and technical tracks and lower than 60% for the BSIB programme must take the remediation course in Math. All qualified applicants for BSCS and BSIE programmes coming from the literature and Islamic tracks must take the remediation course in Math.

d. Secondary Grade in Science

A qualified applicant for BSME, BSIE, BSEnE, BSCS, BSIT, BSBI, and BSAF programmes who has a secondary grade score in science of lower than 60% must take tutorial class in general science before taking any university-level science course.

Note: UTB can accept new students equivalent to 5% of the total enrollment where student



applicant has a CGPA below 60% but not lower than 50% from Bahraini Schools; below 41% but not lower than 33% from Indian and Pakistan Schools; and for other non-Bahrain based Schools, it will be based on the passing mark of the school. The 5% is subject to strict evaluation by the dean and the applicant's score in the OOPT and the secondary school grades.

#### **B. For Undergraduate Transfer Student Applicants**

##### **Application Requirements:**

1. Completely filled out an admission application form
2. Official Transcript of Records (TOR) from the university previously attended. Rules and regulations of the HEC-Bahrain regarding the authentication of foreign certificates and private school certificates are to be applied when necessary.
3. Course description of all completed courses for which transfer credit is sought (authenticated by the originating university)
4. Certificate of Transfer from the university previously attended stamped by MOE, if any.
5. Withdrawal Certificate stamped by MOE
6. Submission of all required documents stated in the admissions policy.
7. The applicant should have a good moral standing from the university from which he/she is transferring.

##### **Admissions Requirements:**

- a. For Bahrain and KSA qualifications, the applicant should have at least a secondary school average of 60%. For non-Bahrain secondary qualifications (Indian and Pakistan) the applicant should have at least 41% secondary school average; and for other non-Bahraini qualifications please refer to the table of cut-off.
- b. If the applicant has taken and passed courses in English and Mathematics in the previous university, the applicant will be exempted in taking the remedial courses in both English and Mathematics. The applicant may proceed to mainstream university courses and is eligible to apply for credit transfer.
- c. If the applicant has not taken any courses in English, he/she shall take the OOPT. If the results on the two parts of OOPT results is passed, he will proceed to university English courses, otherwise, he/she will enroll the remedial courses in English where he/she fails.
- d. If the applicant has not taken any course in Mathematics, the basis for evaluation whether remedial course in mathematics is required or not is the score in mathematics subjects in his/her last year in the secondary school certificate using the table presented earlier.

The transfer of course credits is accepted at UTB provided that courses applied for crediting are equivalent to the courses where credit will be transferred. Practicum (Internship) course is eligible for credit transfer with the same practicum (internship) course from other university or re-admitted student from UTB.

The University requires the undergraduate student to complete at least 50% of the required credit units/hours of a programme in residence at UTB. The maximum credit units/hours that are eligible for transfer credits should not exceed two-thirds (66%) of the required credit units/hours based on his/her original degree from another university

#### **16. CGPA Requirement for Graduation**

2.00 / 4.00

#### **17. Key Resources of information about the programme**

1. Included in the College Catalogue
2. Uploaded on the university website

### 18. BSBI CURRICULUM SKILLS MAPPING

Year	Course Code	Course Title	Core (C) or Option (O)	Program Intended Learning Outcomes							
				P1	P2	P3	P4	P5	P6	P7	P8
Year 1 1 <sup>st</sup> Tri	ENGL401	English Communication Skills1	(C)							√	
	HIST400	History of Bahrain and the GCC Region	(C)						√		
	MATH401	College Algebra	(C)	√	√		√	√		√	√
	SOCI400	Sociology	(C)				√				
	BUSI615	Principles of Management	(C)	√			√		√	√	√
	COMP613	Fundamentals of Information Systems	(C)				√				
EUTH400	Euthenics 1	(C)									
Year 1 2 <sup>nd</sup> Tri	ENGL402	English Communication Skills 2	(C)							√	
	BUSI621	Organizational Behavior	(C)	√		√	√		√		√
	BUSI622	Financial Accounting 1	(C)	√		√	√	√		√	√
	BUSI633	Microeconomic s	(C)	√		√			√		√
	BSBI625	Principles of Banking and Finance	(C)	√				√	√		√
	COMP623	Business Information Systems	(C)	√	√		√		√		√
EUTH401	Euthenics 2	(C)									
Year 1 3 <sup>rd</sup> Tri	ARAB400A	Arabic Language	(C)							√	
	ENGL403	Speech and Oral Communication	(C)							√	
	HUMR400	Human Rights	(C)				√				
	BUSI631	Principles of Marketing	(C)	√		√				√	√
	BUSI632	Human Resource Management	(C)		√	√	√			√	√
	BUSI713	Macroeconomics	(C)	√		√			√	√	√
Year 2 1 <sup>st</sup> Tri	ENGL502	Technical Writing	(C)							√	√
	MATH403	Business Statistics	(C)							√	
	BUSI711	Managerial Accounting 1	(C)	√			√	√		√	√
	BSBI711	Bahrain Business	(C)	√		√		√	√		√



		Environment & Cross-Cultural Management									
	COMP711	Introduction to E-Commerce	(C)	√		√				√	√
	COMP712	Computer Programming 1	(C)	√	√	√		√	√	√	√
Year 2 2nd Tri	ENVM400	Environmental Management	(C)	√	√				√	√	√
	BUSI721	Quantitative Methods	(C)								
	BUSI712	Mathematics of Investment	(C)	√		√	√		√	√	√
	COMP721	Database Management Systems	(C)	√		√	√	√	√	√	√
	COMP722	Human-Computer Interaction	(C)	√	√		√	√			√
	COMP723	Computer Programming 2	(C)	√		√		√	√		√
Year 2 3rd Tri	BSBI731	Research Methods	(C)		√	√	√		√	√	√
	BSBI732	Technopreneurship	(C)	√					√	√	√
	BSBI733	Financial Management	(C)		√	√		√			√
	COMP731	Systems Analysis and Design 1	(C)		√	√	√	√	√	√	√
	COMP732	IT Infrastructure	(C)	√	√		√	√		√	
	COMP733	Mobile Application Development	(C)	√	√	√			√	√	√
Year 3 1st Tri	BUSI811	Islamic Banking and Finance 1	(C)	√	√		√		√	√	√
	BSBI812	Business Process Management	(C)	√	√	√	√		√	√	√
	BSBI813	Bahrain Business Law and Taxation	(C)	√	√	√	√	√			√
	COMP811	Systems Analysis and Design 2	(C)	√		√		√	√	√	√
	COMP812	IS Strategy, Management & Acquisition	(C)	√	√	√		√	√		√
	BSBI814	Elective 1	(C)								
Year 3 2ndTri	BSBI821	Operations Management	(C)	√		√		√	√	√	√
	COMP821	Information Management, Security and Support	(C)	√		√	√		√		√
	COMP822	Web Design and Development	(C)	√	√	√	√	√			√
	COMP823	Project Management	(C)	√		√		√	√		√
	COMP824	Data Mining &	(C)	√	√	√	√	√	√	√	√



		Warehousing									
	COMP825	FinTech	(C)	√	√	√	√	√	√		√
Year 3 3 <sup>rd</sup> Tri	BSBI831	Digital Marketing	(C)		√	√	√	√	√	√	√
	BSBI832	Business Planning	(C)	√	√	√			√	√	√
	BSBI833	BSBI Capstone Project A	(C)	√	√	√		√	√		√
	BUSI831	Business Analytics	(C)	√		√	√	√		√	√
	COMP832	Enterprise Systems Architecture and Applications	(C)	√	√	√	√	√			√
	COMP833	Elective 2	(C)								
Year 4 1 <sup>st</sup> Tri	BSBI841	Business Ethics	(C)	√	√	√			√	√	√
	BSBI842	Business Informatics Internship	(C)	√	√	√	√	√	√	√	√
	BSBI843	BSBI Capstone Project B	(C)	√		√	√	√	√	√	√
	COMP841	Cloud Computing	(C)	√	√	√	√		√	√	√
	COMP842	Elective 3	(O)								

#### ELECTIVE COURSES

Elective Title		P1	P2	P3	P4	P5	P6	P7	P8
Business Innovation	(O)	√	√	√	√		√	√	√
Strategic Management	(O)	√		√	√		√	√	√
Supply Chain Management	(O)		√	√		√		√	√
Multimedia Development	(O)		√	√		√	√	√	√
Open Source Software	(O)	√		√	√	√			√
Computing Trends	(O)	√		√	√	√		√	√
Accounting Information Systems	(O)	√		√		√	√		√

#### BACHELOR OF SCIENCE IN BUSINESS INFORMATICS (BSBI) CURRICULUM PLAN EFFECTIVE SY2021-2022

##### Course Description

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL401	English Communication Skills 1	3	0	3
<p>This is an introductory course in English communication designed to provide comprehensive, up-to-date and relevant instruction in the correct use of grammar. It intends to build up students' confidence in communicating their thoughts, ideas, information and messages through the functions and structures of different words, phrases, clauses, sentences and paragraphs. In addition, the integration of language skills increases their communicative competence and prepares them for the academic and social challenges in college and beyond.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH401	College Algebra	3	0	3
<p>This course is designed to familiarize learners with main theories, principles and concepts of college algebra that are useful in analysis and simplification of basic and some advanced mathematical problems. Content includes functions which are polynomial, rational, exponential, logarithmic and related equations. Sketching graphs, Matrices, determinants, progressions and inequalities as applied to engineering.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BUSI615	Principles of Management	3	0	3



The course provides in depth knowledge and understanding of the theories, structures, and trends of management in organizations. The course deals with organizational environment and application of managerial functions of planning, organizing, leading and controlling.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
COMP613	Fundamentals of Information Systems	3	0	3

This course focuses on the detailed knowledge on management information systems by establishing a link between business processes and information technology. It includes the topics on decision making frameworks, types of information systems, systems development, networks, IT infrastructure and, social impacts of IT.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
EUTH400	Euthenics 1	1	0	0

This course is designed to bring in the policies and procedures in the university, to guide the students in the performance of their respective role and to become adept on ideals needed in their academic pursuit. Thus, students are oriented on the history, vision, mission, values and objectives of the university, the services and academic support available, the academic and non-academic policies, the different misconduct and violations with corresponding penalties in which the learning objectives are better facilitated by various classroom discussion through collaborative team work learning experience.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL402	English Communication Skills 2	3	0	3

This is an intermediate course in English communication geared towards equipping the college students with writing skills in preparation for academic writing. It progresses from familiarizing the sentence conventions to balancing the structures of the sentence for variation and rhythm. Further, it enables students to follow the principles that govern the composition writing in achieving unity, coherence and emphasis; to improve their expository, descriptive, narrative and argumentative works and to get hold of the discipline in academic writing for future advantages by providing them the opportunity in adhering the process of writing for effective communication.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
HIST400	History of Bahrain and the GCC Region	3	0	3

This Course includes the history of the Kingdom of Bahrain and the Arabian Gulf region. It includes the important events in Bahrain and the Arabian Gulf region and their impact on the current situation. It covers the strategic importance of Bahrain, starting with "Ancient civilizations and passing through" the Islamic era, Bahrain's entry into Islam, Portuguese occupation, competition of powers in the 17th century and the rise of a tribe of Al-Atub. It includes the history of Bahrain under the British protection and the conventions between Bahrain and Great Britain up to British troops leaving the region. It describes the places and persons as well as the historical developments and achievement in Bahrain during the time of Al- Khalifah. It includes independence of Bahrain, issuing of the first constitutional law, reform project by His Majesty King Hamad, constitutional amendments, establishment of GCC, history of Arab Gulf states. It makes the student able to present his patriotic character through historical discussions.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
SOCI400	Sociology	3	0	3

This course is designed to expose students in a detailed approach of studying society. It intends to give emphasis on the sociological perspectives, relationships with other social sciences, the main figures in sociological development, including introduction to culture, transformation of societies, importance of socialization, social groups, deviance and social control. Further, it incorporates the discussions on social institutions that enable the college students to understand the economic perspective from ancient to present, the evolution of education and the current viewpoint of family.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
-------------	--------------	---------	---------	-------



BUSI621	Organizational Behavior	3	0	3
The course takes an in-depth look at human behavior in organizations. Incorporating current management theory and research, the course investigates the factors that influence individual and group performance. Topics include perception, personality, attitudes, values, motivation, decision making, leadership, power and politics, conflict and negotiation, groups, and culture.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BUSI622	Financial Accounting 1	2	2	3
This course deals with the detailed knowledge and understanding on the theoretical accounting framework, objectives of financial statements, accounting conventions, and generally accepted accounting principles relating to the preparation and presentation of financial statements for the benefit of the various users of financial statements. It covers valuation of the asset, liability, and owners' equity accounts.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BUSI633	Microeconomics	3	0	3
This course deals with detailed knowledge and understanding of macroeconomic issues focusing on the determination of GDP, unemployment, interest rates, and inflation. The students will have advanced understanding of circular flow, inflation, unemployment, nominal GDP and real GDP, aggregate demand, and aggregate supply. The course builds advanced skills to analyze the macroeconomic policies, such as fiscal and monetary policies. It enables students to apply macroeconomics tools to real world economic policy.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BSBI625	Principles of Banking and Finance	3	0	3
The course deals with both theoretical and practical concerns related to today's financial system. It covers money and the financial system, the payment system, financial instruments and financial institutions. The discussion on the roles of the Central Bank and its policies that govern the operations of all financial institutions including the management of the risks. It is designed to give the students the lifelong ability to understand and evaluate whatever financial innovations they may confront.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
COMP623	Business Information Systems	2	2	3
This course focuses on the basic and advanced concepts of information technology, its tools and applications. It includes MS Office applications that are used for daily tasks to improve decision making and productivity. The course enables the students to demonstrate high level of proficiency in word processing, spreadsheets, PowerPoint presentation, electronic mail, and internet browsing. Students also analyze and evaluate the internet's impact on the use of IS in organizations.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
COMP712	Computer Programming 1	2	2	3
This course focuses on the advanced concepts of procedural programming. Topics include data types, control structures, functions, arrays, files, and the mechanics of running, testing, and debugging. Algorithms and problem-solving: Problem-solving strategies; the role of algorithms in the problem-solving process; implementation strategies for algorithms; debugging strategies; the concept and properties of algorithms - Fundamental programming constructs: Syntax and semantics of a higher-level language; variables, types, expressions, and assignment; simple I/O; conditional and iterative control structures; and functions and parameter passing.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
COMP723	Computer Programming 2	2	2	3
This course provides detailed knowledge in advanced concepts of Java computer programming built on the information gained from the previous Java programming course. It concentrates on methods, arrays, strings, exception handling, Java Applets, Java applications. The laboratory focuses on the development of advanced Java programs and applications.				

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
-------------	--------------	---------	---------	-------



EUTH401	Euthenics 2	1	0	0
This course is designed to provide the discussion on the students' rules and regulations of the university in order to practice the right conduct of behavior inside and outside the university premises. It intends to teach the students on the different stages of personality development, the equivalent penalties in different academic offences and factors that influence behavioral multiple intelligences. Further, the incorporation of oral/written communication through individual and group discussions can encourage learners to ponder on the meaning of life and discover the purpose of their existence.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
MATH403	Business Statistics	3	0	3
The course deals with the study of the fundamental concepts and principles in statistics and its application to business. It covers concepts on collecting, organizing, and presenting data, numerical descriptive measures. It also identifies the theorem of probability, probability distributions and link it with real life problems, it also covers inferential measures and how we interpret the data for decision making.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
ARAB400A	Arabic Language	3	0	3
The course focuses on the fundamentals of Arabic language, such as reading, analyzing, and critique. It explains the characteristics of the required texts, which deal with different literary genres, prose and poetry. The course also focuses on the understanding and application of grammatical rules and basic morphological methods in Arabic, taking into account the correct spelling skills.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
HUMR400	Human Rights	3	0	3
This course makes the students able to know the background, main concepts of Human Rights and the philosophical thoughts and Islamic view which contribute in modern Human Rights. It makes them able to analyze what is mentioned in different kinds of Human Rights sources as Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and International Covenant on Economic, Social and Cultural Rights. It deals in the same approach with the National Sources of Human Rights such as the Constitutional Law of Kingdom of Bahrain and National Action Charter with applications as well. The course makes the students able to analyze, discuss and debate Human Rights issues in different ways.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BUSI712	Mathematics of Investment	3	0	3
The course provides in depth understanding concepts, mathematical problems and solutions concerning money transaction associated with interest and time. It integrates practical and theoretical aspects of finance and investments essential for the success of all business disciplines. It also covers discussions regarding the theories and applications of simple and compound interest and simple annuity.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
ENGL403	Speech and Oral Communication	3	0	3
This is a developmental course in English communication geared towards competent, efficient, and effective interpersonal speaking across communicative contexts. It refines oral communication skills through accurate articulation of segmental phonemes, pronunciation drills and enunciation of the suprasegmental features of speech, specifically sentential stress and intonation. Further, it incorporates the mechanics and techniques of speech craft and delivery with emphases on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BUSI631	Principles of Marketing	3	0	3
The course demonstrates detailed knowledge and understanding of the principles and practices of modern marketing. It emphasizes on the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services that satisfy individual and organizational objectives.				

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
-------------	--------------	---------	---------	-------



BUSI632	Human Resource Management	3	0	3
This course demonstrates advanced knowledge and understanding on the management of the most important resource in an organization-human resource. It surveys contemporary techniques for managing the corporate human resource's function. Topics include planning, staffing, developing, rewarding, and maintaining organizations, jobs, and people.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BUSI713	Macroeconomics	3	0	3
This course deals with detailed knowledge and understanding of macroeconomic issues focusing on the determination of GDP, unemployment, interest rates, and inflation. The students will have advanced understanding of circular flow, inflation, unemployment, nominal GDP and real GDP, aggregate demand, and aggregate supply. The course builds advanced skills to analyze the macroeconomic policies, such as fiscal and monetary policies. It enables students to apply macroeconomics tools to real world economic policy.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BUSI711	Managerial Accounting 1	3	0	3
This course focuses on modern techniques and approaches for active management of operation costs to achieve organizational efficiency and effectiveness. Specific topics cover cost management information, cost behavior; cost terms and concepts; cost classification; and cost accounting techniques.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
COMP711	Introduction to e-Commerce	3	0	3
This course focuses on advanced the concepts, vocabulary, and procedures associated with e-commerce and the internet. The student gains an overview of all aspects of e-commerce. Topics include development of the internet and e-commerce, options available for doing business on the internet, features of web sites and the tools used to build an e-commerce web site, ethical issues, payment options, security issues, and customer service.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BSBI711	Bahrain Business Environment & Cross Cultural Management	3	0	3
This course deals within depth understanding of business environment in the Kingdom of Bahrain. This course tackles relevant trends and issues on Bahrain business where students can relate and apply the theories learned from the core subjects in previous semesters. Moreover, the course discusses the role of different ministries and bodies that regulate and influence the private sector.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
ENVM400	Environmental Management	3	0	3
This course examines the environmental management of natural resources, basic scientific principles, energy flow, population and food security, conventional and renewable energy, water issues, pollution and its relationship to human health, climate impact, waste management and hazardous materials, cost benefit analysis applied to environmental issues, management of resource, sustainable best practice and environmental laws and policies are discussed.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BUSI721	Quantitative Methods	3	0	3
The course provides an advanced knowledge and understanding of quantitative techniques currently used in business and management. The course is designed for student to apply quantitative techniques, as well as software applications, in solving business problems and/or in making decisions. Topics include linear programming, forecasting and linear regression, queuing models, decision network analysis and decision theory.				

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
-------------	--------------	---------	---------	-------



COMP721	Database Management Systems	2	2	3
This course provides the core theories principles topics of database management systems. The topics include introduction to the database theory, models, data normalization, data description languages, data manipulation languages and query design. The course covers creating tables, defining integrity and constraints, data manipulation, data selection, joins, nested queries and views.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
COMP722	Human-Computer Interaction	3	0	3
The course provides detailed knowledge to the field of human-computer interaction (HCI), an interdisciplinary field that integrates cognitive psychology, design, computer science, and others. Examining the human factors associated with information systems provides the students with the knowledge to understand what influences usability and acceptance of IS. The course examines human performance, components of technology, methods, and techniques used in the design and evaluation of IS. Societal impacts of HCI such as accessibility are also discussed. User-centered design methods are introduced and evaluated. This course also introduces students to the contemporary technologies used in empirical evaluation methods.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
ENGL502	Technical Writing	3	0	3
This is an advanced course in English academic writing designed to deal with the application of the technical writing principles with the correspondence on business, science, and technology. It aims to develop the technical writing skills and communication of the college students thru the discussions of its elements and ethics with the use of digital technologies. Furthermore, it enables students to adapt the various communication routes in the workplace, to conceptualize suitable contents of technical writing, to understand the characteristics and other methods of communication techniques, to plan and organize advanced level tasks and to work effectively and with accountability with other team members in a creative and productive manner, in any language learning scenario when achieving personal and group outcomes.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BSBI731	Research Methods	3	0	3
The course covers the core principles and methods applicable in doing business research in information technology that will transform through business practices, inspiring innovation that will give a solution to a business problem or an enhancement in business operations. Focus on systematic collection of data and analysis of information that will result to a meaningful business research and influencing the complex mechanisms of communication, collaboration and information management.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BSBI732	Technopreneurship	3	0	3
This course provides advanced concepts, facts, and ideas of starting a business, working for an entrepreneurial company or working with entrepreneurial firms as an investor or advisor. The course is designed to demonstrate necessary techniques and tools to planning and organizing business and is aimed to integrate the overall dimensions of entrepreneurship, including identifying a winning business opportunity, gathering funding for and launching a business, growing the organization and harvesting the rewards. In particular topics covered different types of entrepreneurship, its importance for economies, business model creation, financial evaluation and financing the start-up.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BSBI733	Financial Management	3	0	3
This course explores in depth the concepts on financial management that are applicable to corporate decisions and their implementations such as cost of capital, risk and expected return, sources of short-term finance, choice of capital structure and working capital management which are primary focus of this course. This course aims to introduce the students to the tools and techniques of financial management and their uses to managerial decision making.				

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
-------------	--------------	---------	---------	-------



COMP731	Systems Analysis and Design 1	2	2	3
<p>This course provides detailed knowledge about the core theories, principles, concepts, techniques, tools, and perspectives essential for systems analysts. System analysts solve business problems through analyzing the requirements of information systems and designing such systems by applying analysis and design techniques. It deals with planning the development of information systems through understanding and specifying in detail what a system should do and how the components of the system should be implemented and work together. It concentrates on the role of system analyst and organizational style and its impact on information systems. The laboratory focuses on object- oriented and use-case driven approaches, requiring students to go through the steps of system analysis and design to synthesize information and formulate solution to a real-life business problem.</p>				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
COMP732	IT Infrastructure	3	0	3
<p>This course provides details of the advanced knowledge of information technology recognized as a critical area in infrastructure management and IT issues. The course applies researches related to the security concepts as well as the new methods used to solve the problem faced by implementing new technology to enhance the data center and reduce risks that might be caused in the organization. It covers topics related to both computer systems architecture and communications network, with an over-all focus on the advanced knowledge of services and capabilities that IT Infrastructure solutions in an organizational context. Students will examine the concepts, models, architectures, protocols, and standards related to the development of an integrated technical architecture (hardware, platforms, software, networks, and data) to serve organizational needs in a rapidly changing competitive and technological environment. It likewise prepares the students for organizational roles that require interaction with external vendors of IT infrastructure component and solutions.</p>				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
COMP733	Mobile Application Development	2	2	3
<p>This course focuses on mobile application development for the Android platform. Android is a software stack for mobile devices that includes an operating system, middleware and key applications. The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language. Students will learn skills for creating and deploying Android applications, with particular emphasis on software engineering topics including software architecture, software process, usability, and deployment.</p>				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BUSI811	Islamic Banking and Finance 1	3	0	3
<p>This course analyzes economic activities based on the economic rationale of Islamic values and Islamic law. It covers topics on economic policies, business strategies and government regulations within the context of Islamic markets. It examines how and why Islamic values determine the business climate. It provides a clear framework for analyzing the micro- and macro-economic foundations of the Islamic system.</p>				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BSBI812	Business Process Management	2	2	3
<p>The course integrates the core theories on the analysis, design and implementation of business process automation technology including automation suites and service-enabled system to handle documents and workflow of business processes. The course involves the automated coordination of activities, allocation of tasks to process participants and the integration of applications to achieve significant efficiency gains for organizations.</p>				

<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
--------------------	---------------------	----------------	----------------	--------------



BSBI813	Bahrain Business Law and Taxation	3	0	3
This course provided specialized knowledge and understanding of business laws, regulations, and principles which influence the transaction of business in the international arena. Topics include the classification and sources of law; contracts and functions of contracts; and negotiable instruments. Business laws operating in Bahrain are also given emphasis on this course.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
COMP811	System Analysis and Design 2	2	2	3
This course is the continuation of Systems Analysis and Design 1 and leads to the examination of system analysis and design processes. Students will be introduced to comparative development methodologies and modeling tools including project management and cost-benefit analysis; information systems planning and project identification and selection; requirements collection and structuring; process modeling; conceptual and logical data modeling; database design and implementation; design of the human-computer interface; system implementation; system maintenance and change management. The course will culminate with a major project and presentation which allows the students to develop their interpersonal, conflict resolution, and management skills in a simulated project environment.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
COMP812	IS Strategy, Management & Acquisition	3	0	3
This course explores the Explores the advanced acquisition, development, and implementation of plans and policies to achieve efficient and effective information systems; Evaluate the issues and approaches in managing the IS function and how the IS function supports and enables organizational capabilities and strategies.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
BSBI821	Operations Management	3	0	3
The course provides critical knowledge and understanding of the processes and techniques related to operations management. This course focuses on major current issues covering productivity in both manufacturing and service operations. It also deals with advanced and some complex situations and/or problems related to improving products and services to retain global competitiveness and achieve customer satisfaction.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
COMP821	Information Management, Security, and Support	3	0	3
This course provides details of advanced knowledge of information security recognized as a critical area in management and IT issues. It concentrates on advance situations of measures to ensure confidentiality, availability and integrity of information systems. The course apply researches related to the security concepts as well as the new method used to solve the problem faces through implementing new technology to reduce risks, threats and aware if an expected hackers. Topics include range from hardware software network security, counter measures, and risk management. In addition, identify and implement relevant solutions such as detection of and reaction to threats to information resources, incident response, and disaster recovery. Also, the group responsibility to presentation a technical report in effective ways.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
COMP822	Web Design and Development	2	2	3
This course introduces students to basic web design using HTML (Hypertext Markup Language) and CSS (Cascading Style Sheets). The course does not require any prior knowledge of HTML or web design. Throughout the course students are introduced to planning and designing effective web pages; implementing web pages by writing HTML and CSS code; enhancing web pages with the use of page layout techniques, text formatting, graphics, images, and multimedia; and producing a functional, multi-page website.				



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
COMP823	Project Management	2	2	3
<p>This course discusses the advanced processes, methods, techniques and tools that organizations use to manage IS projects. It covers a systematic methodology for initiating, planning, executing, controlling and closing project. It assumes that project management in the modern organization is a complex-based activity, where various types of technologies are an inherent part of the project management process. It also acknowledges that project management involves both the use of resources from within the firm, as well as contracted from outside the organization.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
COMP824	Data Mining and Warehousing	2	2	3
<p>This course focuses on wide spectrum of industry standard techniques using widely available database and tools packages for knowledge discovery. Data mining is for relatively unstructured data for which more sophisticated techniques are needed. The course aims to cover powerful data mining techniques including clustering, association rules, and classification. It then teaches high volume data processing mechanisms by building warehouse schemas such as snowflake, and star. Online Analytical Processing (OLAP) query retrieval techniques are also introduced.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
COMP825	Fintech	3	0	3
<p>The course integrates with the develop your comprehensive understanding of the principles of FinTech and a solid theoretical background in finance. The focus is to equip you with the key knowledge and skills required to perform a range of roles within the evolving field of FinTech and the contemporary financial markets.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BUSI831	Business Analytics	2	2	3
<p>The course critically demonstrates the key concepts in data visualization and reporting. Topics include concepts and methods used in graphical representation of data, exploration and reporting of data, and basic linear regression methods. Upon completion, students should be able to effectively use graphical tools to communicate insights about data.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSBI831	Digital Marketing	3	0	3
<p>This course focuses on marketing concepts, tools, technologies, and business models to enhance consumer value creation process. Student gains an opportunity to learn an overview of all digital marketing aspects. Topics include overview of digital marketing, online micro- and macro-environments' concepts, digital marketing strategy development, implementing and delivering digital marketing practices.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSBI832	Business Planning	3	0	3
<p>This course requires students to identify business opportunities and develop their own business plan. It guides student in making key decisions regarding the target market, business model, management team, and legal form of the new venture selected. In addition, they will do the basic planning which includes supplementary technologies required, financial resources that can be used, how much investment is required, how fast the venture will grow. It is supplemented by a seminar to complement the lecture and discussions on business plan development.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSBI833	BSBI Capstone Project A	3	0	3
<p>This course integrates and applies theoretical knowledge acquired during the program to a project involving systems documentation and development. The processes start from problem definition to documentation. Moreover, the course requires project proposal, systems planning and design utilizing various methods and their practical application to business and information technology, particularly in IS development.</p>				



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
COMP832	Enterprise Systems Management and Applications	2	2	3
<p>This course focuses on the design, selection, implementation and management of enterprise IT solutions. It focuses on the applications and infrastructure and their fit with the business. It provides students with the frameworks and strategies for infrastructure management, system administration, data/ information architecture, content management, distributed computing, middleware, legacy system integration, system consolidation, software selection, total cost of ownership calculation, IT investment analysis, and emerging technologies. These topics are addressed both within and beyond the organization, with attention paid to managing risk and security within audit and compliance standards.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSBI841	Business Ethics	3	0	3
<p>This course takes into consideration the plethora of issues raised by the Information Age. It explores a wide range of topics including ethical theories, principles and practices; computer crimes, privacy, freedom of expressions, intellectual property issues, impact of technology in productivity and quality of life, social media ethics, ethical issues of e-business, internet-related business ethics problems, and the ethical dimension of information technology on society. This course critically discusses ethical and legal information that any information technology professional and organizations must take into account in their professional and business activities and evaluates the decisions in businesses according to ethical and moral concepts and judgments.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSBI842	Business Informatics Internship	6	0	6
<p>Internship (Practicum) requires students to draw upon multi-disciplinary knowledge and skills acquired from their previous courses. Internship enhances student's skills to an advanced level allowing them to pursue careers as professionals and employees in leadership positions. The students will undertake 240 hours of training in the companies in actual work environment under the guidance of the practicum adviser.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSBI843	BSBI Capstone Project B	3	0	3
<p>This course enables students to continue the first part of the Capstone Project to develop and implement the project using suitable system development tools and methodologies. The focus of the documentation is on the application of process models, project management, risk management, and concluding parts of the project – summary, conclusion and recommendations. The course requires submission of project documentation and successful project oral defense.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
COMP841	Cloud Computing	3	0	3
<p>The course presents a top-down view of cloud computing, from applications and administration to programming and infrastructure. Its main focus is on parallel programming techniques for cloud computing and large-scale distributed systems which form the cloud infrastructure. The topics include overview of cloud computing, cloud systems, parallel processing in the cloud, distributed storage systems, virtualization, security in the cloud, and multicore operating systems. Students will study state-of-the-art solutions for cloud computing developed by Google, Amazon, Microsoft, Yahoo, VMWare, etc. Students will also apply what they learn in one programming assignment and one project executed over Amazon Web Services.</p>				
<b>ELECTIVE 1 (Business Component)</b>				
Course Title	Lec Hrs	Lab Hrs	Units	
Business Innovation	3	0	3	
<p>This course describes how business innovation serves as a fundamental driver of competitiveness for firms in a wide variety of business sectors. It also aims to introduce to students the concepts, theories and strategies that create and deliver value for firms through innovation network, research and development, innovation in products, services, operations, and the commercialization process, with emphasis on the complexities and risks associated with managing innovations. The course further aims to equip the students with the necessary</p>				



knowledge, skills and attitude to apply strategies and tactics in managing various types of business innovations.				
<b>Course Title</b>		<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
Strategic Management		3	0	3
The course focuses on advanced corporate and divisional policy formulation and implementation. The knowledge and techniques learned in earlier courses will be applied in an integrated fashion to the process of strategic decision-making and organizational change. Among the topics considered in the course will be the relationships of organizations to their environments, the hierarchy of organizational objectives, structured as well as informal approaches to strategic planning, the integration of business functions, organizational structure, and policy implementation and evaluation.				
<b>Course Title</b>		<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
Supply Chain Management		3	0	3
The purpose of this course is to introduce students to the field of supply chain management. In this course, the student will gain an end-to-end perspective of managing global supply chains through the introduction of the functional areas of supply chain management. Students will be exposed to functional business processes while gaining a perspective of how functional business processes must be integrated to achieve supply chain objectives.				
<b>ELECTIVE 2 &amp; ELECTIVE 3 (Informatics Component)</b>				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
Elective	Multimedia Development	2	2	3
This course explores strategies for creating and integrating multimedia in business. Using equipment and Windows-based software common on many computers; students will apply these tools to web development projects and contents will include copyright/ fair use, image editing, photo editing, audio recording, movie recording, PowerPoint, and Webpage publishing.				
<b>Course Code</b>	<b>Course Title</b>	<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
Elective	Open Source Software	2	2	3
This course examines the issues associated with open-source technologies, with a focus on understanding the implications for businesses that are interested in using them. Through a combination of readings, presentations, discussion and hands-on projects, we will examine the characteristics of key open-source technologies (Linux, MySQL, Apache, et al), the nature of open source communities, their development processes, and the evolving structure of the open source industry.				
<b>Course Title</b>		<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
Computing Trends		2	2	3
This course covers Topics which include current or new trends in computing and disruptive technologies in IT (Information Technology) including professional issues, and emerging trends and current topics in business informatics research. Emphasis is given to the way technologies create a competitive edge and generate business value. An example of this is the most-related current computing trend like Internet of Things (IoT) which provides advanced data collection, connectivity, and analysis for machines, connecting everything together for a better future. Other topics include but not limited to block chain technology, nanotechnology, and Artificial Intelligence.				
<b>Course Title</b>		<b>Lec Hrs</b>	<b>Lab Hrs</b>	<b>Units</b>
Accounting Information Systems		2	2	3
This course examines the design, operations, risks, and controls of accounting information systems. Emphasis is placed on financial transaction cycles and core business processes, with focus on the risks and controls involved in the processing of financial transactions in a computerized environment. This also considers current issues on accounting information systems that have ethical considerations and practical applications.				



	Doc. No.	QR-AAD-018
	Issue No.	01
	Revision No.	03
College/Department: College of Administrative and Financial Sciences		
<b>BSIB PROGRAMME SPECIFICATION 2021-2022</b>		Page <b>64</b> of <b>226</b>
<b>1. Teaching Institution</b>	University of Technology Bahrain	
<b>2. University Department</b>	College of Administrative and Financial Sciences (CAFS)	
<b>3. Programme Title</b>	Bachelor of Science in International Business (BSIB)	
<b>4. Title of Final Award</b>	Bachelor of Science in International Business	
<b>5. Modes of Attendance offered</b>	Actual classroom learning-interactive	
<b>6. National Qualification Framework Level and Credits</b>	NQF Level 8 540 NQF Credits (180 ACS Credits)	
<b>7. Accreditation</b>	European Council for Business Education (ECBE)	
<b>8. Other external influences</b>	<p><b>Local External Influences/ References</b>  Ministry of Education (MOE), Higher Education Council (HEC)  Education and Training Quality Authority (BQA)  Bahrain National Qualification Framework (NQF)</p> <p><b>International External Influences/ References</b>  QAA-UK Subject Benchmark Statement for General Business and Management 2019  European Council for Business Education (ECBE)  Association to Advance Collegiate Schools for Business</p>	
<b>9. Date of production/ revision of this specification</b>	September 1, 2021	
<b>10. Aims of the Programme</b>		
<p>The Bachelor of Science in International Business (BSIB) Programme provides knowledge and skills required to manage international and global business affairs. The programme intends to develop students with skills and competencies necessary to understand the dynamics of international and global dimension of management and strategy, trade and markets, finance, and emerging economies. The Programme also endeavors to prepare the students to obtain potentials leading to management positions and provides a launch pad for global careers.</p> <p><b>Programme Educational Objectives:</b></p> <p>Graduates of the programme three (3) to five (5) years after graduation shall be able to:</p> <ol style="list-style-type: none"> <li>1. Possess the relevant knowledge, skills, and entrepreneurial mindset to respond proactively and creatively to contemporary business issues and challenges of global business environment.</li> <li>2. Engage and succeed in international business careers through a range of intellectual, professional attributes and transferable skills such as commercial acumen, research, teamwork, ethical behavior, proactive involvement, and effective communication.</li> <li>3. Transfigure knowledge, understanding and academic skills through postgraduate study and/or continuing professional development.</li> </ol>		



## 11. Learning Outcomes, Teaching, Learning and Assessment Methods

1. Demonstrate critical knowledge and understanding of the characteristics, functions, processes of business organizations, management of risks, and economies in global contexts.
2. Critically relate and adapt business related theories, models, concepts, and approaches to address complex business problems and changing nature of business at national and global level.
3. Use a broad range of approaches to provide in-depth business solutions related to domestic and international business operations and strategy, cross culture management, public policy domains and ethical standards.
4. Critically analyze and evaluate the contemporary organizations, their practices, and the major business issues to make and communicate effective decisions.
5. Formulate creative business solution to business problems or opportunity using latest thinking, theories, and frameworks in best business practices.
6. Use technology, investigative methods, quantitative skills, analytical tools, and specialized application in a manner that contribute to the effective management and execution of range of tasks.
7. Communicate using appropriate style and presentation about the specialized topics related to international business for the intended audience.
8. Manage and lead diverse groups in developing solutions to complex problems and issues.

### Teaching and Learning Methods

1. Constructive Method. Learners must be fully engaged and active in the process of constructing meaning and knowledge based on their prior knowledge and experiences through the process of doing, making, writing, designing, creating, and solving. It allows teachers to implement differentiated learning, authentic assessment practices and incorporate technologies to improve individual learning experiences. It includes simulations, in-course projects, field trips, digital content, group discussions and reflections. This method strives to improve achievement by consciously developing learners' ability to consider ideas, analyze perspectives, solve problems, and make decisions on their own thereby making them more responsible and independent.
2. Inquiry based Method. Learners develop cognitive skills like critical thinking and problem solving by working on questions, problems, or scenarios and formulate creative solutions. The teachers use either structured, guided, or open inquiry to facilitate learning. As a process, learners are involved in their learning by formulating questions, investigating, building their understanding, and creating meaning and new knowledge on a certain lesson. Typical activities include laboratory sessions and research-based activities.
3. Collaborative Method. Learners are divided into small groups to learn something together and capitalize on one's other resources and skills, evaluating one another ideas, and monitoring one another's work. It allows students to actively interact by sharing experiences and take on different roles. Typically, students are provided with problems or projects that they work on together to search for understanding, meaning, or solutions and each group is expected to work together developing or formulating solutions and present the solution in class. The activities include think-pair-share, jigsaw, or round-robin which effectively engage students to complete the tasks.
4. Experiential learning method is the process of learning by doing. By engaging students to hands on experience which attempts to apply theories and knowledge learned in the classroom to real-world situations. This may include team challenges, simulations, company visits/fieldworks and other extracurricular activities. Experiential learning opportunities exist in a variety of course- and non-course-based forms and may include community service, service-learning, undergraduate research, study abroad, and culminating experiences such as internships, student teaching, and capstone projects

### Assessment Methods

- Assessment is done independently for each course. Variety of assessment tools will be used to assess achievement of intended learning outcomes including but not limited to major exams, assignments,



case analysis and presentations.

- In addition, assessments of learning outcomes also include thesis writing, practicum, and indirect assessment.

## 12. Programme Structure

### BACHELOR OF SCIENCE IN INTERNATIONAL BUSINESS (BSIB) CURRICULUM PLAN EFFECTIVE SY2021-2022

#### REMEDIAL CLASSES

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
MATH300	Remedial Mathematics	3	0	0	
ENGL301	Speaking and Listening	9	0	0	
ENGL302	Grammar and Vocabulary	9	0	0	
<b>Total Units</b>				<b>0</b>	

#### FIRST YEAR ATTENDANCE

##### FIRST TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENGL401	English Communication Skills 1	3	0	3	
MATH401	College Algebra	3	0	3	
BUSI615	Principles of Management	3	0	3	
COMP613	Fundamentals of Information Systems	3	0	3	
HIST400	History of Bahrain and GCC Region	3	0	3	
SOCI400	Sociology	3	0	3	
EUTH400	Euthenics 1	1	0	0	
<b>Total Units</b>				<b>18</b>	

##### SECOND TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENGL402	English Communication 2	3	0	3	ENGL401
MATH403	Business Statistics	3	0	3	MATH401
BSIB626	Business Organization and Management	3	0	3	BUSI615
BUSI621	Organizational Behavior	3	0	3	
BUSI622	Financial Accounting 1	2	2	3	
BSIB625	Business Technology Applications	2	2	3	COMP613
EUTH401	Euthenics 2	1	0	0	EUTH400
<b>Total Units</b>				<b>18</b>	

##### THIRD TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENGL403	Speech and Oral Communication	3	0	3	ENGL402
HUMR400	Human Rights	3	0	3	SOCI400
BUSI631	Principles of Marketing	3	0	3	
BSIB636	Financial Accounting 2	3	0	3	BUSI622
BUSI632	Human Resource Management	3	0	3	BUSI621
BUSI633	Microeconomics	3	0	3	
<b>Total Units</b>				<b>18</b>	



**SECOND YEAR ATTENDANCE**  
**FIRST TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENGL502	Technical Writing	3	0	3	ENGL403
ARAB400A	Arabic Language	3	0	3	
BUSI711	Managerial Accounting 1	3	0	3	BSIB636
BSIB711	Ethics and Corporate Governance	3	0	3	BSIB626
BUSI712	Mathematics of Investment	3	0	3	MATH401
BUS1713	Macroeconomics	3	0	3	BUSI633
<b>Total Units</b>				<b>18</b>	

**SECOND TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BUSI721	Quantitative Methods	3	0	3	MATH403
ENGL503	Public Speaking	3	0	3	ENGL403
BSIB721	Corporate and Business Law	3	0	3	BSIB711
BSIB722	Marketing Management	3	0	3	BUSI631
BSIB723	Managerial Accounting 2	3	0	3	BUSI711
BSIB724	Managerial Economics	3	0	3	BUSI633
<b>Total Units</b>				<b>18</b>	

**THIRD TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BSIB731	International Business Law	3	0	3	BSIB721
BSIB732	International Economics	3	0	3	BSIB713
BSIB733	Entrepreneurship & Innovation	3	0	3	BSIB722
BSIB734	International Business	3	0	3	BSIB722
BSIB735	Corporate Finance 1	3	0	3	BUSI712
BSIB736	Management Information System	3	0	3	BSIB625
<b>Total Units</b>				<b>18</b>	

**THIRD YEAR ATTENDANCE**  
**FIRST TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
FLAN501	Foreign Language 1	3	0	3	
BSIB811	Strategy and International Management	3	0	3	BSIB734
BSIB812	Cross Cultural Management	3	0	3	BSIB734
BSIB813	Corporate Finance 2	3	0	3	BSIB735
BSIB814	Logistics and Supply Chain Management	3	0	3	BUSI721
BUSI811	Islamic Banking and Finance 1	3	0	3	BSIB735
<b>Total Units</b>				<b>18</b>	



## SECOND TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
FLAN502	Foreign Language2	3	0	3	FLAN501
BSIB821	Digital Business	3	0	3	BSIB733
BSIB822	International Project Management	3	0	3	BSIB814
BSIB823	Elective 1	3	0	3	3 <sup>rd</sup> Year Standing
BSIB824	Business Research Methods	3	0	3	ENGL502, MATH403; BSIB812
BSIB825	International Finance	3	0	3	BSIB813
<b>Total Units</b>				<b>18</b>	

## THIRD TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BUSI831	Business Analytics	2	2	3	BSIB736
BSIB831	Thesis Writing A	3	0	3	BSIB824
BSIB832	Internship	0	12	6	3 <sup>rd</sup> Year Standing
BSIB833	Elective 2	3	0	3	3 <sup>rd</sup> Year Standing
BSIB834	Elective 3	3	0	3	3 <sup>rd</sup> Year Standing
<b>Total Units</b>				<b>18</b>	

## FOURTH YEAR ATTENDANCE

### FIRST TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BSIB841	International Resourcing and Talent Management	3	0	3	BSIB812
BSIB842	Global Business Sustainability and Responsibility	3	0	3	BSIB812
BSIB843	Global Marketing Strategy	3	0	3	BSIB821
BSIB844	Global Supply Chain Management	3	0	3	BSIB822
BSIB845	Global Investment and Portfolio Management	2	2	3	BSIB825
BSIB846	Thesis Writing B	3	0	3	BSIB831
<b>Total Units</b>				<b>18</b>	
<b>Grand Total</b>				<b>180</b>	

### ELECTIVES

Course Code	Course Title (Any three (3) among the following electives) Course Title	Units
	Elective 1	
	International Business Negotiation	3
	Strategic Leadership	3
	Elective 2	
	International Business Trends & Seminar	3
	Managing Quality	3



	Elective 3	
	Islamic Banking 2	3
	Financial Risk Management	3

### 13. Awards and Credits

<b>Degree/ Certificate Awarded</b>	Bachelor's Degree
<b>Total Units for Degree</b>	180
<b>Total Trimesters Completed</b>	10

### 14. Personal Development Planning

1. Periodic in-house trainings and peer mentoring related to subject specialization.
2. Attendance of faculty members to local and international conferences, seminars and trainings related to their fields of specialization.
3. Support faculty members to conduct research projects and publish research outputs aligned to college research thrusts and priorities.
4. Establish partnerships and linkages where research collaborations can be made.

### 15. Admission Criteria

Admission to University of Technology Bahrain (UTB) is open to all qualified applicants.

Acceptance to the University depends on the following criteria:

#### B. For First Year Undergraduate Applicants

Acceptance to the University depends on the following admissions requirements:

1. Completely filled out an admission application form.
2. Minimum secondary school scores 60% or its equivalent.
3. UTB Placement Test (Oxford Online Placement Test (OOPT)) result.
4. Submission of all required documents stated in the Admissions Policy.

To be admitted to any undergraduate programme, the applicant must satisfy the minimum secondary school grades or its equivalent without the need to take the UTB placement test and remediation classes of English, and Math, as shown in the following table:

<b>Subtest Component for Bahraini, KSA, Kuwait, Qatar, Yemen, Switzerland, USA, and Ecuador Qualification</b>		<b>Programme</b>		
		<i>BSME, BSEnE, BSIT, BSBI, BSAF</i>	<i>BSCS, BSIE</i>	<i>BSIB</i>
Mathematics	Science/ Technical/General Track	At least 70% or C	At least 70% or C	At least 60% or D
	Commercial Track	At least 80% or B	At least 80% Or B	At least 60% or D
	Literature and Islamic Tracks	At least 80% or B	All must undergo remedial mathematics	At least 60% or D
Science		60	60	N/A
English		At least 80 or B	At least 80 or B	At least 80 or B

\*This is applicable to Bahraini and similarly equivalent qualification



Subtest Component for Other Qualification (Indian, Pakistan, and West African)		Programme		
		BSME, BSEnE, BSIT, BSBI, BSAF	BSCS, BSIE	BSIB
Mathematics	Science/ Technical/General Track	At least 51 or C1	At least 51 or C1	At least 41 or C2
	Commercial Track	At least 71 or B1	At least 71 or B1	At least 41 or C2
	Literature and Islamic Tracks	At least 71 or B1	All must undergo remedial mathematics	At least 41 or C2
Science		60	60	N/A
English		At least 71 or B1	At least 71 or B1	At least 71 or B1

\*Note: Science component is subject to the evaluation of the Dean.

For the undergraduate applicant who did not meet the minimum required secondary school grades in Mathematics, Science and English or its equivalent, his/her admissions depends on the following criteria:

Programme	Secondary School Grade	Placement Test in English (OOPT)	Remarks
All Programmes	60-79 % grade in English	Score $\geq$ 55 %	No need for remediation in English
		Score < 55 %	Remediation in English
BSIE, BSCS	Literature and Islamic Tracks	N/A	Remediation in Math
	Commercial Track: Score 60-79%	N/A	Remediation in Math
BSME, BSEnE, BSIT, BSBI, BSAF	For Commercial Track: Score 60-79% in Math For Scientific and technical Track: Score 60-69% in Math	N/A	Remediation in Math
	For Science score <60%	N/A	Tutorial class in general sciences
BSIB	Score <60% in Math	N/A	Remediation in Math
All Programmes	CGPA <60% for Bahraini and KSA CGPA <41% for Indian	N/A	Will be subjected to 5% admission rule of UTB (As explained under note)



	and Pakistan		
--	--------------	--	--

\*This is applicable to Bahraini and similarly equivalent qualification

a. Secondary Grade in English

A qualified applicant for all programmes whose secondary school grade in English is within 60-79%, needs to take the placement test in English (OOPT). If the OOPT test result is 55 or above, applicant will not take remediation course in English. However, if the result is lower than 55, applicant will take remediation course in English.

b. TOEFL/IELTS

Qualified applicant who attain the score of at least 500 (173 CBT, 61 iBT) for TOEFL, or with a score of 5.5 for IELTS, is exempted to sit the required English placement test.

c. Secondary Grade in Math

A qualified applicant for BSME, BSEnE, BSIT, BSBI, and BSAF programmes who has a secondary grade score in Math of 60-79% for commercial track and 60-69% for scientific and technical tracks and lower than 60% for the BSIB programme must take the remediation course in Math. All qualified applicants for BSCS and BSIE programmes coming from the literature and Islamic tracks must take the remediation course in Math.

d. Secondary Grade in Science

A qualified applicant for BSME, BSIE, BSEnE, BSCS, BSIT, BSBI, and BSAF programmes who has a secondary grade score in science of lower than 60% must take tutorial class in general science before taking any university-level science course.

Note: UTB can accept new students equivalent to 5% of the total enrollment where student applicant has a CGPA below 60% but not lower than 50% from Bahraini Schools; below 41% but not lower than 33% from Indian and Pakistan Schools; and for other non-Bahrain based Schools, it will be based on the passing mark of the school. The 5% is subject to strict evaluation by the dean and the applicant's score in the OOPT and the secondary school grades.

**C. For Undergraduate Transfer Student Applicants**

Application Requirements:

8. Completely filled out an admission application form
9. Official Transcript of Records (TOR) from the university previously attended. Rules and regulations of the HEC-Bahrain regarding the authentication of foreign certificates and private school certificates are to be applied when necessary.
10. Course description of all completed courses for which transfer credit is sought (authenticated by the originating university)



11. Certificate of Transfer from the university previously attended stamped by MOE, if any.
12. Withdrawal Certificate stamped by MOE
13. Submission of all required documents stated in the admissions policy.
14. The applicant should have a good moral standing from the university from which he/she is transferring.

**Admissions Requirements:**

- a. For Bahrain and KSA qualifications, the applicant should have at least a secondary school average of 60%. For non-Bahrain secondary qualifications (Indian and Pakistan) the applicant should have at least 41% secondary school average; and for other non-Bahraini qualifications please refer to the table of cut-off.
- b. If the applicant has taken and passed courses in English and Mathematics in the previous university, the applicant will be exempted in taking the remedial courses in both English and Mathematics. The applicant may proceed to mainstream university courses and is eligible to apply for credit transfer.
- c. If the applicant has not taken any courses in English, he/she shall take the OOPT. If the results on the two parts of OOPT results is passed, he will proceed to university English courses, otherwise, he/she will enroll the remedial courses in English where he/she fails.
- d. If the applicant has not taken any course in Mathematics, the basis for evaluation whether remedial course in mathematics is required or not is the score in mathematics subjects in his/her last year in the secondary school certificate using the table presented earlier.

The transfer of course credits is accepted at UTB provided that courses applied for crediting are equivalent to the courses where credit will be transferred. Practicum (Internship) course is eligible for credit transfer with the same practicum (internship) course from other university or re-admitted student from UTB.

The University requires the undergraduate student to complete at least 50% of the required credit units/hours of a programme in residence at UTB. The maximum credit units/hours that are eligible for transfer credits should not exceed two-thirds (66%) of the required credit units/hours based on his/her original degree from another university.

**16. CGPA Requirement for Graduation**

2.00 / 4.00

**17. Key Resources of information about the programme**

12. Included in the College Catalogue
13. Uploaded on the university website

## 18. BSIB CURRICULUM SKILLS MAPPING

Year	Course Code	Course Title	Core (C) or Option (O)	Program Intended Learning Outcomes							
				P1	P2	P3	P4	P5	P6	P7	P8
Year 1 1 <sup>st</sup> Tri	ENGL401	English Communication Skills 1	(C)							√	
	MATH401	College Algebra	(C)						√		
	BUSI615	Principles of Management	(C)	√	√		√	√		√	√
	HIST400	History of Bahrain and GCC Region	(C)				√				
	COMP613	Fundamentals of Information Systems	(C)		√			√	√	√	√
	SOCI400	Sociology	(C)				√				
	EUTH400	Euthenics1	(C)								
Year 1 2 <sup>nd</sup> Tri	ENGL402	English Communication2	(C)							√	
	MATH403	Business Statistics	(C)						√		
	BSIB626	Business Organization and Management	(C)	√	√		√	√		√	√
	BUSI621	Organizational Behavior	(C)	√			√		√	√	√
	BUSI622	Financial Accounting 1	(C)	√		√		√	√	√	√
	BSIB625	Business Technology Applications	(C)						√	√	√
	EUTH401	Euthenics2	(C)								
Year 1 3 <sup>rd</sup> Tri	ENGL403	Speech and Oral Communication	(C)							√	
	HUMR400	Human Rights	(C)				√				
	BUSI631	Principles of Marketing	(C)	√	√				√	√	√
	BSIB636	Financial Accounting 2	(C)	√		√	√		√	√	√
	BUSI632	Human Resources Management	(C)	√		√	√		√		√
	BUSI633	Microeconomics	(C)	√	√			√	√	√	√
Year 2 1 <sup>st</sup> Tri	ENGL502	Technical Writing	(C)							√	√
	ARAB400A	Arabic Language	(C)							√	
	BUSI711	Managerial Accounting 1	(C)	√	√			√	√	√	√
	BUSI712	Mathematics of Investment	(C)	√	√	√	√		√	√	√
	BUSI713	Macroeconomics	(C)	√	√			√	√	√	√
	BSIB711	Corporate Governance and Ethics	(C)	√	√	√	√			√	
Year 2	BUSI721	Quantitative Methods	(C)	√		√		√	√	√	√



2nd Tri	ENGL503	Public Speaking	(C)							√	
	BSIB721	Corporate and Business Law	(C)		√		√	√		√	√
	BSIB722	Marketing Management	(C)	√	√		√		√	√	√
	BSIB723	Managerial Accounting 2	(C)	√	√			√	√	√	√
	BSIB724	Managerial Economics	(C)	√	√		√	√	√	√	√
Year 2 3rd Tri	BSIB731	International Business Law	(C)		√		√	√		√	√
	BSIB732	International Economics	(C)	√	√		√		√	√	√
	BSIB733	Entrepreneurship & Innovation	(C)	√	√		√		√	√	√
	BSIB734	International Business	(C)	√	√	√			√	√	√
	BSIB735	Corporate Finance 1	(C)		√		√	√	√	√	√
	BSIB736	Management Information System	(C)	√			√		√	√	√
Year 3 1st Tri	FLAN501	Foreign Language 1	(C)							√	
	BSIB811	Strategy and International Management	(C)	√	√		√		√	√	√
	BSIB812	Cross Cultural Management	(C)	√	√	√				√	√
	BSIB813	Corporate Finance 2	(C)		√		√	√	√	√	√
	BSIB814	Logistics and Supply Chain Management	(C)	√	√			√	√	√	√
	BUSI811	Islamic Banking and Finance 1	(C)		√		√	√	√	√	√
Year 3 2nd Tri	FLAN502	Foreign Language2	(C)							√	
	BSIB821	Digital Business	(C)		√	√			√	√	√
	BSIB822	International Project Management	(C)		√	√	√		√	√	√
	BSIB823	Elective 1	(C)								
	BSIB824	Research Methods	(C)				√	√	√	√	√
	BSIB825	International Finance	(C)	√	√		√	√	√	√	√
Year 3 3rd Tri	BUSI831	Business Analytics	(C)	√	√	√	√		√	√	√
	BSIB831	Thesis Writing A	(C)				√	√	√	√	√
	BSIB832	Internship	(C)	√	√	√	√	√	√	√	√
	BSIB833	Elective 2	(C)								
	BSIB834	Elective 3	(C)								
Year 4 1st Tri	BSIB841	International Resourcing and Talent Management	(C)	√	√	√	√			√	√
	BSIB842	Global Business Sustainability and Responsibility	(C)		√		√		√	√	√
	BSIB843	Global Marketing Strategy	(C)	√	√	√	√		√	√	√
	BSIB844	Global Supply Chain Management	(C)	√	√	√	√			√	√
	BSIB845	Global Investment	(O)	√		√	√	√	√	√	√



		and Portfolio Management									
	BSIB846	Thesis Writing B	(C)	√	√	√	√	√	√	√	√

#### ELECTIVE COURSES

Elective Title		P1	P2	P3	P4	P5	P6	P7	P8
International Business Negotiation	(O)	√	√		√		√	√	√
Strategic Leadership	(O)	√			√		√		√
International Business Trends & Seminar	(O)		√	√	√	√	√	√	√
Managing Quality	(O)	√	√	√	√			√	√
Islamic Banking 2	(O)		√		√	√		√	√
Financial Risk Management	(O)		√		√	√	√	√	√

### BACHELOR OF SCIENCE IN INTERNATIONAL BUSINESS (BSIB) CURRICULUM PLAN EFFECTIVE SY2021-2022

#### Course Description

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
<b>ENGL401</b>	<b>English Communication Skills 1</b>	<b>3</b>	<b>0</b>	<b>3</b>
This is an introductory course in English communication designed to provide comprehensive, up-to-date and relevant instruction in the correct use of grammar. It intends to build up students' confidence in communicating their thoughts, ideas, information and messages through the functions and structures of different words, phrases, clauses, sentences and paragraphs. In addition, the integration of language skills increases their communicative competence and prepares them for the academic and social challenges in college and beyond.				
<b>MATH401</b>	<b>College Algebra</b>	<b>3</b>	<b>0</b>	<b>3</b>
This course is designed to familiarize learners with main theories, principles and concepts of college algebra that are useful in analysis and simplification of basic and some advanced mathematical problems. Content includes functions which are polynomial, rational, exponential, logarithmic and related equations. Sketching graphs, Matrices, determinants, progressions and inequalities as applied to engineering.				
<b>BUSI615</b>	<b>Principles of Management</b>	<b>3</b>	<b>0</b>	<b>3</b>
This course provides in depth knowledge and understanding of the theories, structures and trends of management in organizations. The course deals with organizational environment and application of managerial functions of planning, organizing, leading and controlling.				
<b>COMP613</b>	<b>Fundamentals of Information Systems</b>	<b>3</b>	<b>0</b>	<b>3</b>
This course focuses on the detailed knowledge on management information systems by establishing a link between business processes and information technology. It includes the topics on decision making frameworks, types of information systems, systems development, networks, IT infrastructure and, social impacts of IT.				
<b>HIST400</b>	<b>History of Bahrain and the GCC Region</b>	<b>3</b>	<b>0</b>	<b>3</b>
This Course includes the history of the Kingdom of Bahrain and the Arabian Gulf region. It includes the important events in Bahrain and the Arabian Gulf region and their impact on the current situation. It covers the strategic importance of Bahrain, starting with "Ancient civilizations and passing through" the Islamic era, Bahrain's entry into Islam, Portuguese occupation, competition of powers in the 17th century and the rise of a tribe of Al-Atub. It includes the history of Bahrain under the British protection and the conventions between Bahrain and Great Britain up to British troops leaving the region. It describes the places and persons as well as the historical developments and achievement in Bahrain during the time of Al- Khalifah. It includes				



independence of Bahrain, issuing of the first constitutional law, reform project by His Majesty King Hamad, constitutional amendments, establishment of GCC, history of Arab Gulf states. It makes the student able to present his patriotic character through historical discussions.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
<b>SOCI400</b>	<b>Sociology</b>	<b>3</b>	<b>0</b>	<b>3</b>

This course is designed to expose students in a detailed approach of studying society. It intends to give emphasis on the sociological perspectives, relationships with other social sciences, the main figures in sociological development, including introduction to culture, transformation of societies, importance of socialization, social groups, deviance and social control. Further, it incorporates the discussions on social institutions that enable the college students to understand the economic perspective from ancient to present, the evolution of education and the current viewpoint of family.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
<b>EUTH400</b>	<b>Euthenics 1</b>	<b>1</b>	<b>0</b>	<b>0</b>

This course is designed to bring in the policies and procedures in the university, to guide the students in the performance of their respective role and to become adept on ideals needed in their academic pursuit. Thus, students are oriented on the history, vision, mission, values and objectives of the university, the services and academic support available, the academic and non-academic policies, the different misconduct and violations with corresponding penalties in which the learning objectives are better facilitated by various classroom discussion through collaborative teamwork learning experience.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
<b>ENGL402</b>	<b>English Communication Skills 2</b>	<b>3</b>	<b>0</b>	<b>3</b>

This is an intermediate course in English communication geared towards equipping the college students with writing skills in preparation for academic writing. It progresses from familiarizing the sentence conventions to balancing the structures of the sentence for variation and rhythm. Further, it enables students to follow the principles that govern the composition writing in achieving unity, coherence and emphasis; to improve their expository, descriptive, narrative and argumentative works and to get hold of the discipline in academic writing for future advantages by providing them the opportunity in adhering the process of writing for effective communication.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
<b>MATH403</b>	<b>Business Statistics</b>	<b>3</b>	<b>0</b>	<b>3</b>

The course deals with the study of the fundamental concepts and principles in statistics and its application to business. It covers concepts on collecting, organizing and presenting data, numerical descriptive measures. It also identify the theorem of probability, probability distributions and link it with real life problems, it also covers inferential measures and how we interpret the data for decision making.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
<b>BSIB626</b>	<b>Business Organization and Management</b>	<b>3</b>	<b>0</b>	<b>3</b>

This course demonstrates detailed knowledge and understanding of the challenges and opportunities associated with organizational management in the global environment. It emphasizes on the process and effect of internationalization in contemporary business, along with an introduction to theories, concepts, and skills relevant to managing effectively in today's global environment.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
<b>BUSI621</b>	<b>Organizational Behavior</b>	<b>3</b>	<b>0</b>	<b>3</b>

The course takes an in-depth look at human behavior in organizations. Incorporating current management theory and research, the course investigates the factors that influence individual and group performance. Topics include perception, personality, attitudes, values, motivation, decision making, leadership, power and politics, conflict and negotiation, groups, and culture.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
<b>BUSI622</b>	<b>Financial Accounting 1</b>	<b>2</b>	<b>2</b>	<b>3</b>

This course deals with detailed knowledge and understanding of the accounting cycle for business using the computerized accounting system. It includes topics on accounting cycle, cash, accounts receivable, inventory,



and the preparation of financial statements for business decision-making.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB625	Business Technology Applications	2	2	3

This course is designed to develop the technological proficiencies of the students in word processing, spreadsheets, presentations, data visualization, electronic mail, and internet browsing.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
EUTH401	Euthenics 2	1	0	0

This course is designed to provide the discussion on the students' rules and regulations of the university in order to practice the right conduct of behavior inside and outside the university premises. It intends to teach the students on the different stages of personality development, the equivalent penalties in different academic offences and factors that influence behavioral multiple intelligences. Further, the incorporation of oral/written communication through individual and group discussions can encourage learners to ponder on the meaning of life and discover the purpose of their existence.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
ENGL403	Speech and Oral Communication	3	0	3

This is a developmental course in English communication geared towards competent, efficient and effective interpersonal speaking across communicative contexts. It refines oral communication skills through accurate articulation of segmental phonemes, pronunciation drills and enunciation of the suprasegmental features of speech, specifically sentential stress and intonation. Further, it incorporates the mechanics and techniques of speech craft and delivery with emphases on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
HUMR400	Human Rights	3	0	3

This course makes the students able to know the background, main concepts of Human Rights and the philosophical thoughts and Islamic view which contribute in modern Human Rights. It makes them able to analyze what is mentioned in different kinds of Human Rights sources as Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and International Covenant on Economic, Social and Cultural Rights. It deals in the same approach with the National Sources of Human Rights such as the Constitutional Law of Kingdom of Bahrain and National Action Charter with applications as well. The course makes the students able to analyze, discuss and debate Human Rights issues in different ways.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BUSI631	Principles of Marketing	3	0	3

The course demonstrates detailed knowledge and understanding of the principles and practices of modern marketing. It emphasizes on the process of planning and executing the conception, pricing, promotion, and distribution of ideas, good, and services that satisfy individual and organizational objectives.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB636	Financial Accounting 2	3	0	3

This course provides detailed knowledge and understanding on the transactions, financial statements, and problems peculiar to the operations of partnerships and corporations as distinguished from the sole proprietorship. Special topics on book value per share and earnings per share are included.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BUSI632	Human Resource Management	3	0	3

This course demonstrates advanced knowledge and understanding on the management of the most important resource in an organization-human resource. It surveys contemporary techniques for managing the corporate human resource's function. Topics include planning, staffing, developing, rewarding, and maintaining organizations, jobs, and people.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BUSI633	Microeconomics	3	0	3

This course is to develop ways of analyzing the behavior of specific economic units that make up the economic



aggregates. The main focuses will be on theories of consumption, production, and cost. The course enables the students to demonstrate in depth understanding of law of demand, law of supply, concept of elasticity, consumer behavior and cost analysis. The course will rely on graphical analysis and numerical calculations. The learners will demonstrate deep understanding of the micro economic principles and its methods as well as tools to understand micro units of economy.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
ENGL502	Technical Writing	3	0	3

This is an advanced course in English academic writing designed to deal with the application of the technical writing principles with the correspondence on business, science, and technology. It aims to develop the technical writing skills and communication of the college students thru the discussions of its elements and ethics with the use of digital technologies. Furthermore, it enables students to adapt the various communication routes in the workplace, to conceptualize suitable contents of technical writing, to understand the characteristics and other methods of communication techniques, to plan and organize advanced level tasks and to work effectively and with accountability with other team members in a creative and productive manner, in any language learning scenario when achieving personal and group outcomes.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
ARAB400A	Arabic Language	3	0	3

The course focuses on the fundamentals of Arabic language, such as reading, analyzing, and critique. It explains the characteristics of the required texts, which deal with different literary genres, prose and poetry. The course also focuses on the understanding and application of grammatical rules and basic morphological methods in Arabic, taking into account the correct spelling skills.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BUSI711	Managerial Accounting 1	3	0	3

This course focuses on modern techniques and approaches for active management of operation costs to achieve organizational efficiency and effectiveness. Specific topics cover cost management information, cost behavior; cost terms and concepts; cost classification; and cost accounting techniques.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB711	Ethics and Corporate Governance	3	0	3

This course equips students with advanced knowledge and understanding of the social responsibility, governance, and sustainability reporting frameworks of the organization. It covers topics on agency, stakeholder analysis, organizational social responsibility, scope, and approaches of governance, reporting to stakeholders, the board of directors, and the public sector governance.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BUSI712	Mathematics of Investment	3	0	3

The course provides in-depth understanding concepts, mathematical problems and solutions concerning money transaction associated with interest and time. It integrates practical and theoretical aspects of finance and investments essential for the success of all business disciplines. It also covers discussions regarding the theories and applications of simple and compound interest and simple annuity.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BUSI713	Macroeconomics	3	0	3

This course deals with detailed knowledge and understanding of macroeconomic issues focusing on the determination of GDP, unemployment, interest rates, and inflation. The students will have advanced understanding of circular flow, inflation, unemployment, nominal GDP and real GDP, aggregate demand, and aggregate supply. The course builds advanced skills to analyze the macroeconomic policies, such as fiscal and monetary policies. It enables students to apply macroeconomics tools to real world economic policy.

Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BUSI721	Quantitative Methods	3	0	3

The course provides an advanced knowledge and understanding of quantitative techniques currently used in business and management. The course is designed for students to apply quantitative techniques, as well as software applications, in solving business problems and/or in making decisions. Topics include linear programming, forecasting and linear regression, queuing models, and decision network analysis and decision



Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
ENGL503	Public Speaking	3	0	3
This 3-unit course deals with the academic study of public speaking, its functions in present day situations in a culturally diverse society. It develops competent communicators and prepares students for communication challenges in local, as well as global contexts. Further, it is an avenue for students to embody the 3Cs of an effective public speaker: competence, character and composure, of which are essential in the demands of business-related correspondence and communication.				
BSIB721	Corporate and Business Law	3	0	3
This course develops an advanced knowledge and understanding of the general legal framework and of specific legal areas relating to business. It covers topics on employment law, formation and constitution of companies, the financing of companies and types of capital, administration, and regulation of companies. It also deals with the legal aspects of insolvency.				
BSIB722	Marketing Management	3	0	3
The course provides advanced knowledge and understanding of the concepts of making marketing decisions in business. It covers analyzes of customers' needs, market segmentation, customer relationship management, integrated communication management and managerial implications of various decisions, paradigms and models used in business marketing management				
BSIB723	Managerial Accounting 2	3	0	3
This course covers an advanced knowledge and understanding of the management accounting concepts and techniques for performance measurement and for decision making. Topics covers some specialist cost and management accounting techniques; decision-making techniques; budgeting; variance analysis; performance management systems, performance measurement, and control.				
BSIB724	Managerial Economics	3	0	3
This course demonstrates advanced knowledge and understanding of the application of economic theory and methodology to decision-making problems faced by private and public institutions. How to combine the scarce economic resources of a business so that their resources are allocated in the most efficient manner to maximize the value of their enterprise, theory and estimation of demand, production and cost, market structure and pricing policies.				
BSIB731	International Business Law	3	0	3
This course provides advanced knowledge and understanding of business laws, regulations, and principles which influence the transaction of business in the international arena. Topics include the classification and sources of law; contracts and functions of contracts; and negotiable instruments. Business laws operating in Bahrain are also given emphasis on this course.				
BSIB732	International Economics	3	0	3
The course critically examines the patterns and the mechanisms of international economics, with a special focus on international trade. It discusses the patterns of international trade, why nations trade, what they trade, and who gains from trade, without explicit policy interventions. It analyzes the determinants and the implementations of different trade policies, the motives for countries or organizations to restrict or regulate international trade, and the welfare implications of those trade policies.				
BSIB733	Entrepreneurship & Innovation	3	0	3
This course focuses on the interconnection between entrepreneurial thinking and innovation. It deals with how to think like an entrepreneur and provides the models, tools, and frameworks to further develop business or				



idea.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB734	International Business	3	0	3
This course provides advanced knowledge and understanding of the implications of international business for the organization strategy, structure, and functions in the context of global marketplace. It emphasizes the managerial implications of differing political, economic, and legal systems of a country. It covers topics on globalization; national differences in political, economic, legal systems, and economic development; regional economic integration; organizations of international business; and entry modes in developed and emerging markets.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB735	Corporate Finance 1	3	0	3
The course deals with advanced concepts of corporate finance including knowledge of the instruments used by companies to raise finance. It also consists of a broad overview of the principles and theoretical framework leading to sound corporate financial management decision making issues that face modern corporate managers when making capital budgeting and capital structure decisions.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB736	Management Information Systems	2	2	3
This course provides knowledge and understanding of the concept of MIS and the impact it has on business organizations. It deals with the examination of the use of information systems to support the management activities of an organization. Topics include: the fundamentals of hardware, software, database management, systems analyses and design, data communications, transaction processing information systems, decision support systems, information reporting systems, office automation, networks, and expert systems. Case studies and several software packages will be utilized to illustrate the principles covered.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
FLAN501	Foreign Language 1	3	0	3
This course aims to develop among the students the skills needed to be able to understand and speak Basic French. The students are expected to gain basic knowledge to communicate effectively in French. Recognize the effective use of French language in oral communication in various situations. Pronounce words, phrases, sentences with the correct accent; utilize the conventions of standard French in listening and speaking; familiarity with the rules in French grammar and structure of sentences in French; infer meanings from short conversations; identify facts and opinions from varied selections; and opinions from varied selections, and communicate effectively in French.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB811	Strategy and International Management	3	0	3
This course provides students with critical understanding of business firms as principal actors in a global system by integrating insights from global manager's environment, cultural context, and global human resource, managing social responsibilities in international markets, organizational structure and control, global alliances, and motivating and leading in multinational corporations.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB812	Cross Cultural Management	3	0	3
The course demonstrates critical understanding of main concepts and theories in cross-cultural management, and the more recent application of cross-cultural analysis in the context of international business and management. It covers topics of role of culture, motivation, and leadership across cultures.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB813	Corporate Finance 2	3	0	3
The course deals with the advanced concepts of corporate finance. It covers capital investment decisions, leverage and capital structure, dividends, and dividend policy, and raising capital, and short-term financial management.				



Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB814	Logistics and Supply Chain Management	3	0	3
This course focuses on building theoretical and analytical skills in the fields of logistics and supply chain. It covers topics including customer service and satisfaction, role of information in supply chains, sales forecasting and inventory management, warehouse management, materials management, and sourcing and procurement.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BUSI811	Islamic Banking and Finance 1	3	0	3
This course analyzes economic activities based on the economic rationale of Islamic values and Islamic law. It covers topics on economic policies, business strategies and government regulations within the context of Islamic markets. It examines how and why Islamic values determine the business climate. It provides a clear framework for analyzing the micro- and macro-economic foundations of the Islamic system.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
FLAN502	Foreign Language 2	3	0	3
This course aims to equip the college students with the skills necessary for a meaningful communication in French. Understand the rules of French grammar and structure of sentences in French. Identify facts and opinions from varied selections; use punctuation marks as connectors in writing to describe elements of civilization; formulate sentences, drafts and revise texts; follow a process in catalogues, advertisements/slogans; engage in textual analysis techniques; engage in meaningful life situations using persuasive statements and demonstrate skills in oral/written communications in French.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB821	Digital Business	3	0	3
This course critically provides insight into the emergence of the digital economy that has unlocked new opportunities, leading to the creation of new innovations in data driven industries. It covers business driven technology, business strategies, innovative organization, e-business, collaborative partnership, business intelligence, global information systems and global trends.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB822	International Project Management	3	0	3
This course seeks to provide students with the skills and the knowledge necessary to both plan and control moderately complex projects. It critically emphasizes on providing the practical knowledge for managing project scope, schedule, and resources in international environment and mitigates the risks involved in expanding beyond the domestic projects. Topics include project life cycle, work breakdown structure, network diagrams, scheduling techniques, resource allocation decisions as well as audit and termination.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB824	Business Research Methods	3	0	3
The course critically demonstrates knowledge and understanding of the research methodology as they applied to the field of study. Students will gain an overview of the research intends and design, methodology and techniques, formats and presentation, and data management.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB825	International Finance	3	0	3
The course provides a solid understanding of international finance within a complex capital markets context. It emphasizes the managerial perspective of finance for a multinational corporation (MNC) It covers topics on the international monetary system, balance of payments, foreign direct investments, cross-border acquisitions, foreign exchange market, international parity relationship, forecasting foreign exchange rates, and futures and options on foreign exchange.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BUSI831	Business Analytics	2	2	3
The course critically demonstrates the key concepts in data visualization and reporting. Topics include concepts and methods used in graphical representation of data, exploration and reporting of data, and basic linear regression methods. Upon completion, students should be able to effectively use graphical tools to communicate insights about data.				



Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB831	Thesis Writing A	3	0	3
The capstone project is designed to encapsulate all the learning process students will gain from this course. It is considered a strategic learning phase where a case study or problem set is involved. Students are expected to apply a variety of skills, tools, and knowledge to evaluate real-world case issues and endorse an accounting capstone solution or improvement.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB832	Internship		12	6
This course helps students to have the opportunity to develop new skills through experiential learning under the direction of a skilled practitioner. The arrangements for the working relationship must be established prior to the assignment.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB841	International Resourcing and Talent Management	3	0	3
This course demonstrates critical understanding of the key aspects of international human resource management. It focuses on a range of approaches to resourcing and talent management at operational and strategic levels and critically analyzes their impact from contrasting organizational, cultural, and societal perspectives. It equips students with an appreciation of the global employment issues which may impact on resourcing and talent management strategy across a variety of sectors.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB842	Global Business Sustainability and Responsibility	3	0	3
This course critically examines the global environmental influences on acting in a socially responsible way; foreign buyer reactions to responsible business and international market targeting to development of socially responsible international business strategies. It focuses on the strategies, practices, and the sustainability reporting framework that companies can use to contribute to the achievement of UN Sustainable Development Goals.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB843	Global Marketing Strategy	3	0	3
This course provides comprehensive understanding of global competitive marketing core concepts and how global competitive marketing strategies can affect a company's future performance. It provides critical understanding of the cultural dynamics in assessing global markets; developing global vision; managing global marketing, and international business negotiations.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB844	Global Supply Chain Management	3	0	3
This course demonstrates critical understanding of global aspects of supply chain management. It focuses on different types of relationship in supply chains and the collaboration and coordination with supply chain partners. It also deals with supply chain process, strategic supply chain network design, and performance measurement and metrics.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB845	Global Investment and Portfolio Management	2	2	3
This course provides critical understanding of the overall investment environment, including various investment alternatives, markets, information, and transactions. It covers asset pricing models and portfolio theory and critical understanding of investing in the stock market and building stock portfolios. It equips students with necessary skills to apply the principles, theories, and models of portfolio management to analyze stocks and bonds investment problems, formulate trading strategies, and manage financial portfolios. It uses a stock market simulation platform to encourage students to apply their knowledge in an innovative manner.				
Course Code	Course Title	Lec Hrs.	Lab Hrs.	Units
BSIB846	Thesis Writing B	3	0	3
The course focuses on the full completion of the accounting and finance capstone project requirement. Students undergoing this course shall submit, present, and defend the final project.				



<b>ELECTIVE 1</b>			
<b>Course Title</b>	<b>Lec Hrs.</b>	<b>Lab Hrs.</b>	<b>Units</b>
<b>International Business Negotiation</b>	<b>3</b>	<b>0</b>	<b>3</b>
The course provides an in-depth understanding of the theoretical and practical skills needed to engage in negotiations, at both the domestic and international level. The course guides the students through cutting edge debates within the field of international negotiation and mediation and introduces them to the challenges of practical aspects of negotiation through in-class simulations.			
<b>Course Title</b>	<b>Lec Hrs.</b>	<b>Lab Hrs.</b>	<b>Units</b>
<b>Strategic Leadership</b>	<b>3</b>	<b>0</b>	<b>3</b>
The course is designed to provide detailed understanding about leadership strategies of successful organizations and apply strategic and leadership models towards the success of an organization. It enables students to focus on various issues and challenges a leader encounters in managing organizations as well as the exploration of one's own strengths and weaknesses.			

<b>ELECTIVE 2</b>			
<b>Course Title</b>	<b>Lec Hrs.</b>	<b>Lab Hrs.</b>	<b>Units</b>
<b>International Business Trends &amp; Seminar</b>	<b>3</b>	<b>0</b>	<b>3</b>
This course aims to provide an avenue for the students to learn the recent developments and business trends related to accounting, finance, and other fields of business. Students will have an opportunity to work with guest faculty and business and other practitioners; and/or attend business conferences, webinars, and seminars.			
<b>Course Title</b>	<b>Lec Hrs.</b>	<b>Lab Hrs.</b>	<b>Units</b>
<b>Managing Quality</b>	<b>3</b>	<b>0</b>	<b>3</b>
The course deals with the critical knowledge and understanding of the scientific approach to management and employees to be involved in the continuous improvement of processes underlying the production of goods and services. The course intends to develop specialized skills with the learners along with the advanced knowledge on the process of total quality management.			

<b>ELECTIVE 3</b>			
<b>Course Title</b>	<b>Lec Hrs.</b>	<b>Lab Hrs.</b>	<b>Units</b>
<b>Islamic Banking and Finance 2</b>	<b>3</b>	<b>0</b>	<b>3</b>
This course critically demonstrates knowledge and understanding of the financial products of the Islamic banking. It focuses on main concepts of Islamic Banking and the tools that are consistent with Al Shariah. It also includes an evaluation of the banking transactions according to Shariah.			
<b>Course Title</b>	<b>Lec Hrs.</b>	<b>Lab Hrs.</b>	<b>Units</b>
<b>Financial Risk Management</b>	<b>3</b>	<b>0</b>	<b>3</b>
This course provides students with the specialist skills in quantifying risk and proposing strategies to manage portfolios that include equities, fixed income instruments and derivatives.			



<b>1. Teaching Institution</b>	UTB University of technology Bahrain
<b>2. University Department</b>	College of Administrative and Financial Sciences (CAFS)
<b>3. Programme Title</b>	Bachelor of Science in Accounting and Finance (BSAF)
<b>4. Title of Final Award</b>	Bachelor of Science in Accounting and Finance (BSAF)
<b>5. Modes of Attendance offered</b>	Actual classroom learning-interactive
<b>6. Accreditation</b>	None
<b>7. Other external influences</b>	<p><b>Local External Influences/ References</b>            Ministry of Education (MOE), Higher Education Council (HEC)            Bahrain Education and Training Quality Authority (BQA)</p> <p><b>International External Influences/ References</b>            European Council for Business Education Standards (ECBE)            Framework for International Education Standards for            Professional Accountants and Aspiring Professional Accountants            -(2019) International Accounting Education Standards Board            QAA-UK 2019 Subject Benchmark Statement for Accounting</p>
<b>8. Total NQF Credit</b>	Level 8 540 Credit units
<b>9. Date of production of this specification</b>	September, 2022
<b>10. Aims Programme</b>	<p><b>Programme Description</b></p> <p>The Bachelor of Science of Accounting and Finance is designed to equip students with thorough working knowledge, skills, professional values, ethics, and attitudes and the need to integrate these elements to perform the role required in the field of accounting and finance. It has strong emphasis on learning how to apply accounting and financial expertise in the exercise of ethically informed judgment in the complex contexts of the modern world.</p> <p><b>Programme Goals</b></p> <ol style="list-style-type: none"> <li>To equip business graduates with theoretical, analytical, and practical skills which enable them to make ethically informed judgment in the complex contexts of the modern world.</li> <li>To instill among graduates the research competence, social and cultural awareness and commitment to integrity and ethics.</li> <li>To produce graduates who are well-prepared for the challenging careers in accounting and finance and related sectors, as well as for higher degree and/or certification acquisition.</li> </ol> <p><b>Programme Educational Objectives:</b></p> <p>Graduates of the programme, three (3) to five (5) years after graduation shall be able to:</p> <ol style="list-style-type: none"> <li>Demonstrate technical competence, professional skills, and professional values, ethics and attitude</li> </ol>

that enable them to make positive contribution to the profession and throughout their professional lives.

2. Employ technology as a business tool in capturing financial and non-financial information, generating reports and decision making.
3. Promote professionalism and high ethical standards in the field of accounting and finance disciplines that recognizes personal, corporate, and professional responsibility in global financial arena.

#### **11. Learning Outcomes, Teaching, Learning and Assessment Methods**

1. Demonstrate knowledge and understanding of several of the major contexts within which accounting operates, based on a critical evaluation of related theoretical and conceptual frameworks and of empirical evidence as to its effects.
2. Demonstrate detailed knowledge and understanding of theories and the empirical evidence related to finance and other key functional areas of business.
3. Use specialized-level skills to apply principles, standards, concepts, facts, and procedures at a given point in time in preparing financial and/other related reports.
4. Use specialized-level skills to relate and adapt theories, concepts, principles, tools, techniques, and emerging technologies to provide in-depth and creative business solutions to different aspects of business operations, public policy domains, and ethical standards.
5. Use range of approaches to critically evaluate information from variety of sources and perspective through research, analysis and integrations when making decisions.
6. Use technology, analytical tools, and quantitative skills to manipulate data, evaluate, estimate, interpret, and model business problems, functions, and phenomena to solve complex problems, measure progress or establish targets.
7. Communicate information, ideas, problems, and problems related to accounting, finance, and professional values with high degree of proficiency verbally and/or in writing for the intended audience.
8. Demonstrate a capacity to lead a group and/or manage projects with significant responsibility in variable contexts in some unpredictability and complex areas.

#### **Teaching and Learning Methods**

- Lecture. This is used primarily to identify and explain key concepts of the course to guide, explain and facilitate discussions rather than transmit factual material which can be obtained from the recommended textbooks and reference materials through independent learning.
- Discussion/ Case Analysis. Examples, case studies, problems and situations will be analyzed and solved in the class applying the concepts learned during lecture and independent learning.
- Self-directed learning. This allows students to engage with the course materials and learning is facilitated by directed reading, study guides and online materials available in the e-learning site.
- Individual or group activity. Students are given the chance to work alone or in a group, where they are supervised by their professor.
- Seminar. This provides an avenue for the students to learn new business trends.

#### **Assessment Methods**

- Assessment is done independently for each course. Variety of assessment tools will be used to assess achievement of intended learning outcomes including but not limited to a) Written examinations; (b) Oral examinations; (c) Objective testing; (d) Computer-assisted testing;



## 12. Programme Structure

### BACHELOR OF SCIENCE IN ACCOUNTING AND FINANCE (BSAF) CURRICULUM PLAN EFFECTIVE SY2022-2023

#### REMEDIAL CLASSES

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
MATH500	Remedial Mathematics	3	0	0	
ENGL501	Speaking and Listening	9	0	0	
ENGL502	Grammar and Vocabulary	9	0	0	
<b>Total Units</b>				<b>0</b>	

#### FIRST YEAR ATTENDANCE

##### FIRST TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENGL611	English Communication Skills 1	3	0	3	
MATH611	College Algebra	3	0	3	
BSIB626	Business Organization and Management	3	0	3	
COMP613	Fundamentals of Information Systems	3	0	3	
BSAF600	Fundamentals of Accounting	3	0	3	
SOCI600	Sociology	3	0	3	
EUTH400	Euthenics 1	1	0	0	
<b>Total Units</b>				<b>18</b>	

##### SECOND TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENGL621	English Communication Skills 2	3	0	3	ENGL611
HIST600	History of Bahrain and the GCC Region	3	0	3	
BUSI621	Organizational Behavior	3	0	3	BSIB626
BUSI622	Financial Accounting 1	2	2	3	BSAF600
MATH613	Business Calculus	3	0	3	MATH611
BUSI633	Microeconomics	3	0	3	
EUTH401	Euthenics 2	1	0	0	
<b>Total Units</b>				<b>18</b>	

##### THIRD TRIMESTER

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENGL631	Speech and Oral Communication	3	0	3	ENGL621
HUMR600	Human Rights	3	0	3	SOCI600
ARAB600	Arabic Language	3	0	3	
BSIB636	Financial Accounting 2	3	0	3	BUSI622
BUSI632	Human Resource Management	3	0	3	BUSI621
BUSI713	Macroeconomics	3	0	3	BUSI633
<b>Total Units</b>				<b>18</b>	



**SECOND YEAR ATTENDANCE**  
**FIRST TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
ENGL711	Technical Writing	3	0	3	ENGL631
MATH621	Probability and Statistics	3	0	3	MATH613
BUSI712	Mathematics for Investment	3	0	3	MATH611
BSAF711	Financial Accounting and Reporting 1	3	0	3	BSIB636
COMP721	Database Management Systems	2	2	3	COMP613
BUSI631	Principles of Marketing	3	0	3	
<b>Total Units</b>				<b>18</b>	

**SECOND TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BUSI721	Quantitative Methods for Management	3	0	3	MATH613
ENGL721	Public Speaking	3	0	3	ENGL631
BSAF721	Financial Accounting and Reporting 2	3	0	3	BSAF711
BSAF722	Corporate Governance	3	0	3	BUSI632
BSIB736	Management Information Systems	2	2	3	COMP721
BSAF723	Management Accounting 1	3	0	3	BSAF711
<b>Total Units</b>				<b>18</b>	

**THIRD TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BSAF731	Financial Accounting and Reporting 3	3	0	3	BSAF721
BSAF732	Professional Ethics	3	0	3	BSAF722
BSAF733	Taxation	3	0	3	BSAF721
BSAF734	Management Accounting 2	3	0	3	BSAF723
BSAF735	Business and Commercial Law	3	0	3	BSAF722
BSAF736	Corporate Finance	3	0	3	BUSI712
<b>Total Units</b>				<b>18</b>	



**THIRD YEAR ATTENDANCE  
FIRST TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BSAF811	Contemporary Issues in Accounting	3	0	3	BSAF731
BSAF812	International Financial Accounting and Reporting	3	0	3	BSAF731
BSAF813	Business Process Management and Control	2	2	3	BSIB736
BSAF814	Audit and Assurance	3	0	3	BSAF733
BSAF815	Financial Market and Institutions	3	0	3	BSAF736
BSAF816	Advanced Corporate Finance	3	0	3	BSAF736
<b>Total Units</b>				<b>18</b>	

**SECOND TRIMESTER**

Course Code	Course Title	Lec	Lab	U	Pre-Requisites
BSAF821	Cloud Accounting	2	2	3	BSAF813
BSAF822	Investment Management	3	0	3	BSAF816
BSAF823	Risk Management	3	0	3	BSAF815
BSAF824	Advanced Audit and Assurance	3	0	3	BSAF814
BUSI811	Islamic Banking and Finance 1	3	0	3	BSAF815
BSIB616	Research Methods	3	0	3	ENGL502
<b>Total Units</b>				<b>18</b>	

**THIRD TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BSAF831	Security Analysis and Portfolio Management	2	2	3	BSAF822
BSAF832	Internship	0	12	6	BSIB616
BSAF833	Capstone Project A	3	0	3	BSIB616
BSAF834	Data Analytics for Accounting	2	2	3	BSAF821
BSAF835	Elective 1	3	0	3	BSAF822
<b>Total Units</b>				<b>18</b>	



**FOURTH YEAR ATTENDANCE  
FIRST TRIMESTER**

Course Code	Course Title	Lec	Lab	Units	Pre-Requisites
BSAF841	Financial Modeling	2	2	3	BSAF831
BSAF842	Strategic Management Accounting	3	0	3	BSAF834
BSAF843	Capstone Project B	3	0	3	BSAF833
BSAF844	Audit and Assurance in CIS Environment	2	2	3	BSAF834
BSAF845	Elective 2	3	0	3	BSAF822
BSAF846	Elective 3	3	0	3	BSAF822
<b>Total Units</b>				<b>18</b>	
<b>Grand Total</b>				<b>540</b>	

**ELECTIVES**

Course Code	Course Title (Any three (3) among the following electives) Course Title	Units
Electives	Financial Technology	3
	Operations and Supply Chain Management	3
	Strategic leadership	3
	International Finance	3
	Business Trends and Seminars	3
	Accounting for Islamic Financial Institutions	3

**13. Awards and Credits**

<b>Degree/ Certificate Awarded</b>	Bachelor's Degree in Accounting and Finance
<b>Total Units for Degree</b>	180 ACS (540 NQF Credits)
<b>Total Trimesters Completed</b>	10

**14. Development Planning**

1. Periodic in-house trainings and peer mentoring related to subject specialization.
2. Attendance of faculty members to local and international conferences, seminars and trainings related to their fields of specialization.
3. Support faculty members to conduct research projects and publish research outputs aligned to college research thrusts and priorities.
4. Establish partnerships and linkages where research collaborations can be made.

**15. Admission Criteria**

Admission to UTB University of technology Bahrain is open to all qualified applicants.  
Criteria for Admission to the University

Acceptance to the University depends on the following criteria:

Admissions Criteria for Undergraduate Students

A. For First Year Undergraduate Applicants

Acceptance to the University depends on the following admissions requirements:



5. Completely filled out an admission application form.
6. Minimum secondary school scores 60% or its equivalent.
7. UTB Placement Test (Oxford Online Placement Test (OOPT)) result.
8. Submission of all required documents stated in the Admissions Policy.

To be admitted to any undergraduate programme, the applicant must satisfy the minimum secondary school grades or its equivalent without the need to take the UTB placement test and remediation classes of English, and Math, as shown in the following table:

<b>Subtest Component for Bahraini, KSA, Kuwait, Qatar, Yemen, Switzerland, USA, and Ecuador Qualification</b>		<b>Programme</b>		
		<i>BSME, BSEnE, BSIT, BSBI, BSAF</i>	<i>BSCS, BSIE</i>	<i>BSIB</i>
Mathematics	Science/ Technical/General Track	At least 70% or C	At least 70% or C	At least 60% or D
	Commercial Track	At least 80% or B	At least 80% Or B	At least 60% or D
	Literature and Islamic Tracks	At least 80% or B	All must undergo remedial mathematics	At least 60% or D
Science		60	60	N/A
English		At least 80 or B	At least 80 or B	At least 80 or B

\*This is applicable to Bahraini and similarly equivalent qualification

<b>Subtest Component for Other Qualification (Indian, Pakistan, and West African)</b>		<b>Programme</b>		
		<i>BSME, BSEnE, BSIT, BSBI, BSAF</i>	<i>BSCS, BSIE</i>	<i>BSIB</i>
Mathematics	Science/ Technical/General Track	At least 51 or C1	At least 51 or C1	At least 41 or C2
	Commercial Track	At least 71 or B1	At least 71 or B1	At least 41 or C2
	Literature and Islamic Tracks	At least 71 or B1	All must undergo remedial mathematics	At least 41 or C2
Science		60	60	N/A
English		At least 71 or B1	At least 71 or B1	At least 71 or B1

\*Note: Science component is subject to the evaluation of the Dean.

For the undergraduate applicant who did not meet the minimum required secondary school grades in Mathematics, Science and English or its equivalent, his/her admissions depends on the following criteria:



Programme	Secondary School Grade	Placement Test in English (OOPT)	Remarks
All Programmes	60-79 % grade in English	Score $\geq$ 55 %	No need for remediation in English
		Score $<$ 55 %	Remediation in English
BSIE, BSCS	Literature and Islamic Tracks	N/A	Remediation in Math
	Commercial Track: Score 60-79%	N/A	Remediation in Math
BSME, BSEnE, BSIT, BSBI, BSAF	For Commercial Track: Score 60-79% in Math For Scientific and technical Track: Score 60-69% in Math	N/A	Remediation in Math
	For Science score $<$ 60%	N/A	Tutorial class in general sciences
BSIB	Score $<$ 60% in Math	N/A	Remediation in Math
All Programmes	CGPA $<$ 60% for Bahraini and KSA CGPA $<$ 41% for Indian and Pakistan	N/A	Will be subjected to 5% admission rule of UTB (As explained under note)

\*This is applicable to Bahraini and similarly equivalent qualification

a. Secondary Grade in English

A qualified applicant for all programmes whose secondary school grade in English is within 60-79%, needs to take the placement test in English (OOPT). If the OOPT test result is 55 or above, applicant will not take remediation course in English. However, if the result is lower than 55, applicant will take remediation course in English.

b. TOEFL/IELTS

Qualified applicant who attain the score of at least 500 (173 CBT, 61 iBT) for TOEFL, or with a score of 5.5 for IELTS, is exempted to sit the required English placement test.

c. Secondary Grade in Math

A qualified applicant for BSME, BSEnE, BSIT, BSBI, and BSAF programmes who has a secondary grade score in Math of 60-79% for commercial track and 60-69% for scientific and technical tracks and lower than 60% for the BSIB programme must take the remediation course in Math.



All qualified applicants for BSCS and BSIE programmes coming from the literature and Islamic tracks must take the remediation course in Math.

d. Secondary Grade in Science

A qualified applicant for BSME, BSIE, BSEnE, BSCS, BSIT, BSBI, and BSAF programmes who has a secondary grade score in science of lower than 60% must take tutorial class in general science before taking any university-level science course.

Note: UTB can accept new students equivalent to 5% of the total enrollment where student applicant has a CGPA below 60% but not lower than 50% from Bahraini Schools; below 41% but not lower than 33% from Indian and Pakistan Schools; and for other non-Bahrain based Schools, it will be based on the passing mark of the school. The 5% is subject to strict evaluation by the dean and the applicant's score in the OOPT and the secondary school grades.

B. For Undergraduate Transfer Student Applicants

Application Requirements:

1. Completely filled out an admission application form
2. Official Transcript of Records (TOR) from the university previously attended. Rules and regulations of the HEC-Bahrain regarding the authentication of foreign certificates and private school certificates are to be applied when necessary.
3. Course description of all completed courses for which transfer credit is sought (authenticated by the originating university)
4. Certificate of Transfer from the university previously attended stamped by MOE, if any.
5. Withdrawal Certificate stamped by MOE
6. Submission of all required documents stated in the admissions policy.
7. The applicant should have a good moral standing from the university from which he/she is transferring.

Admissions Requirements:

- a. For Bahrain and KSA qualifications, the applicant should have at least a secondary school average of 60%. For non-Bahrain secondary qualifications (Indian and Pakistan) the applicant should have at least 41% secondary school average; and for other non-Bahraini qualifications please refer to the table of cut-off.
- b. If the applicant has taken and passed courses in English and Mathematics in the previous university, the applicant will be exempted in taking the remedial courses in both English and Mathematics. The applicant may proceed to mainstream university courses and is eligible to apply for credit transfer.
- c. If the applicant has not taken any courses in English, he/she shall take the OOPT. If the results on the two parts of OOPT results is passed, he will proceed to university English courses, otherwise, he/she will enroll the remedial courses in English where he/she fails.



d. If the applicant has not taken any course in Mathematics, the basis for evaluation whether remedial course in mathematics is required or not is the score in mathematics subjects in his/her last year in the secondary school certificate using the table presented earlier.

The transfer of course credits is accepted at UTB provided that courses applied for crediting are equivalent to the courses where credit will be transferred. Practicum (Internship) course is eligible for credit transfer with the same practicum (internship) course from other university or re-admitted student from UTB.

The University requires the undergraduate student to complete at least 50% of the required credit units/hours of a programme in residence at UTB. The maximum credit units/hours that are eligible for transfer credits should not exceed two-thirds (66%) of the required credit units/hours based on his/her original degree from another university.

#### 16. Key Resources of information about the programme

1. Included in the University Course Catalogue
2. Included in the College Catalogue
3. Uploaded on the UTB website

#### 17. Skills Map

Year/ Level	Course Code	Course Title	Core (C) Optio n (O)	Programme Intended Learning Outcomes							
				P1	P2	P3	P4	P5	P6	P7	P8
Year 1 1st Tri	ENGL611	English Communication Skills1	C							√	
	MATH611	College Algebra	C						√		
	BSIB626	Business Organization and Management	C		√		√			√	√
	COMP613	Fundamentals of Information Systems	C		√			√	√		√
	BSAF600	Fundamentals of Accounting	C	√		√	√		√	√	√
	SOCI600	Sociology	C	√				√		√	√
	EUTH400	Euthenics 1	C								
Year 1 2nd Tri	ENGL621	English Communication Skills 2	C							√	
	HIST600	History of Bahrain and the GCC Region	C					√			
	BUSI621	Organizational Behavior	C		√		√	√	√		√
	BUSI622	Financial Accounting 1	C	√		√		√	√	√	√
	MATH613	Business Calculus	C						√		
	BUSI633	Microeconomics	C		√	√		√	√	√	√
	EUTH401	Euthenics 2	C								
Year 1 3 <sup>rd</sup> Tri	ENGL631	Speech and Oral Communication	C							√	
	HUMR 600	Human Rights	C					√			



	ARAB600	Arabic Language	C						√	
	BSIB636	Financial Accounting 2	C	√		√		√		√
	BUSI632	Human Resource Management	C		√	√		√		√
	BUSI713	Macroeconomics	C		√		√		√	√
Year 2 1 <sup>ST</sup> Tri	ENGL711	Technical Writing	C						√	√
	MATH621	Probability and Statistics	C		√				√	
	BUSI712	Mathematics for Investment	C		√		√		√	√
	BSAF711	Financial Accounting and Reporting 1	C	√		√		√		√
	COMP721	Database Management Systems	C		√		√		√	√
Year 2 2 <sup>ND</sup> Tri	BUSI631	Principles of Marketing	C		√		√	√	√	√
	BUSI721	Quantitative Methods	C		√		√	√	√	√
	ENGL721	Public Speaking	C						√	
	BSAF721	Financial Accounting and Reporting 2	C	√		√		√		√
	BSAF722	Corporate Governance	C		√		√	√	√	
	BSIB736	Management Information Systems	C		√		√		√	√
Year 2 3 <sup>RD</sup> Tri	BSAF723	Management Accounting 1	C	√		√		√	√	√
	BSAF731	Financial Accounting and Reporting 3	C	√		√		√		√
	BSAF732	Professional Ethics	C	√			√	√	√	√
	BSAF733	Taxation	C	√		√		√	√	√
	BSAF734	Management Accounting 2	C	√		√		√	√	√
	BSAF735	Business and Commercial Law	C		√		√	√		√
Year 3 1 <sup>ST</sup> Tri	BSAF736	Corporate Finance	C		√		√	√	√	√
	BSAF811	Contemporary Issues in Accounting	C	√		√		√	√	√
	BSAF812	International Financial Accounting and Reporting	C	√		√		√		√
	BSAF813	Business Process Management and Control	C		√		√	√	√	√
	BSAF814	Audit and Assurance	C	√		√		√	√	√
	BSAF815	Financial Market and Institutions	C		√		√	√	√	
Year 3 2 <sup>ND</sup> Tri	BSAF816	Advanced Corporate Finance	C		√		√	√	√	√
	BSAF821	Cloud Accounting	C	√		√		√	√	√
	BSAF822	Investment Management	C		√		√	√	√	
	BSAF823	Risk Management	C		√		√	√	√	√
	BSAF824	Advanced Audit and Assurance	C	√		√		√	√	√
	BUSI811	Islamic Banking and	C		√		√	√		√



		Finance										
	BSIB616	Research Methods	C				√	√	√	√	√	
Year 3 3 <sup>rd</sup> Tri	BSAF831	Security Analysis and Portfolio Management	C		√		√	√	√	√	√	
	BSAF832	Internship	C	√	√	√	√	√	√	√	√	
	BSAF833	Capstone Project A	C					√	√	√	√	
	BSAF834	Data Analytics for Accounting	C	√		√		√	√	√	√	
	BSAF835	Elective 1	C									
Year 4 1 <sup>st</sup> Tri	BSAF841	Financial Modeling	C		√	√		√	√	√	√	
	BSAF842	Strategic Management Accounting	C	√		√		√	√	√	√	
	BSAF843	Capstone Project B	C	√	√	√	√	√	√	√	√	
	BSAF844	Audit and Assurance in CIS Environment	C	√		√		√	√	√	√	
	BSAF845	Elective 2	C									
	BSAF846	Elective 3	C									
	Electives		Financial Technology	O		√	√		√	√	√	√
			Operations and Supply Chain Management	O		√	√		√	√	√	√
			Strategic leadership	O		√	√		√	√	√	√
			International Finance	O		√		√	√	√	√	√
			Business Trends and Seminars	O	√	√	√	√	√	√	√	√
			Accounting for Islamic Financial Institutions	O	√		√	√		√	√	√

### Course Description

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL611	English Communication Skills 1	3	0	3
<p>This is an introductory course in English communication designed to provide comprehensive, up-to-date and relevant instruction in the correct use of grammar. It intends to build up students' confidence in communicating their thoughts, ideas, information and messages through the functions and structures of different words, phrases, clauses, sentences, and paragraphs. In addition, the integration of language skills increases their communicative competence and prepares them for the academic and social challenges in college and beyond.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH611	College Algebra	3	0	3
<p>This course is designed to familiarize learners with main theories, principles and concepts of college algebra that are useful in analysis and simplification of basic and some advanced mathematical problems. Content includes functions which are polynomial, rational, exponential, logarithmic, and related equations. Sketching graphs, Matrices, determinants, progressions, and inequalities as applied to engineering.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSIB626	Business Organization and Management	3	0	3
<p>This course demonstrates in-depth understanding of the theoretical concepts of organizations and the roles and responsibilities of managers by introducing the framework for understanding organizations and organizational processes. It provides analysis of organizations and the management tools of planning, organizing, and staffing. The course emphasizes experiential learning and draws on cases studies to help gain practical insights into modern organizations.</p>				



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
COMP613	Fundamentals of Information Systems	3	0	3
This course focuses on the detailed knowledge on management information systems by establishing a link between business processes and information technology. It includes the topics on decision making frameworks, types of information systems, systems development, networks, IT infrastructure and, social impacts of IT.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF600	Fundamentals of Accounting	3	0	3
This course deals with detailed knowledge and understanding of the accounting cycle for business engaged in sole proprietorship or as service enterprise. The fundamental concepts and principles essential to the measurement and communication of said transactions are introduced and emphasized as the course progresses.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
SOCI600	Sociology	3	0	3
This course is designed to expose students in a detailed approach of studying society. It intends to give emphasis on the sociological perspectives, relationships with other social sciences, the main figures in sociological development, including introduction to culture, transformation of societies, importance of socialization, social groups, deviance and social control. Further, it incorporates the discussions on social institutions that enable the college students to understand the economic perspective from ancient to present, the evolution of education and the current viewpoint of family.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
EUTH400	Euthenics 1	1	0	0
This course is designed to bring in the policies and procedures in the university, to guide the students in the performance of their respective role and to become adept on ideals needed in their academic pursuit. Thus, students are oriented on the history, vision, mission, values and objectives of the university, the services and academic support available, the academic and non-academic policies, the different misconduct, and violations with corresponding penalties in which the learning objectives are better facilitated by various classroom discussion through collaborative teamwork learning experience.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL621	English Communication Skills 2	3	0	3
This is an intermediate course in English communication geared towards equipping the college students with writing skills in preparation for academic writing. It progresses from familiarizing the sentence conventions to balancing the structures of the sentence for variation and rhythm. Further, it enables students to follow the principles that govern the composition writing in achieving unity, coherence, and emphasis; to improve their expository, descriptive, narrative, and argumentative works and to get hold of the discipline in academic writing for future advantages by providing them the opportunity in adhering the process of writing for effective communication.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
HIST600	History of Bahrain and the GCC Region	3	0	3
This Course includes the history of the Kingdom of Bahrain and the Arabian Gulf region. It includes the important events in Bahrain and the Arabian Gulf region and their impact on the current situation. It covers the strategic importance of Bahrain, starting with "Ancient civilizations and passing through" the Islamic era, Bahrain's entry into Islam, Portuguese occupation, competition of powers in the 17 <sup>th</sup> century and the rise of a tribe of Al-Atub. It includes the history of Bahrain under the British protection and the conventions between Bahrain and Great Britain up to British troops leaving the region. It describes the places and persons as well as the historical developments and achievement in Bahrain during the time of Al- Khalifah. It includes independence of Bahrain, issuing of the first constitutional law, reform project by His Majesty King Hamad, constitutional amendments, establishment of GCC, history of Arab Gulf states. It makes the student able to present his patriotic character through historical discussions.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BUSI621	Organizational Behavior	3	0	3
The course takes an in-depth look at human behavior in organizations. Incorporating current management theory and research, the course investigates the factors that influence individual and group performance. Topics include perception, personality, attitudes, values, motivation, decision making, leadership, power and politics, conflict and negotiation, groups, and culture.				



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BUSI622	Financial Accounting 1	2	2	3
This course deals with detailed knowledge and understanding of the accounting cycle for business engaged in merchandising activities using the computerized accounting system. It includes topics on merchandising operation; cash; accounts receivable; inventory; and the preparation of financial statements for business decision-making. Accounting topics on the voucher system, petty cash fund, and bank reconciliation statement are also included.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH613	Business Calculus	3	0	3
This course is intended to develop practical skills in calculus. Topics include functions, graphs, limit, differentiation, and integration of algebraic, exponential, and logarithmic functions with emphasis placed on applications in business.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BUSI633	Microeconomics	3	0	3
This course is to develop ways of analyzing the behavior of specific economic units that make up the economic aggregates. The main focuses will be on theories of consumption, production, and cost. The course enables the students to demonstrate in depth understanding of law of demand, law of supply, concept of elasticity, consumer behavior and cost analysis. The course will rely on graphical analysis and numerical calculations. The learners will demonstrate deep understanding of the micro economic principles and its methods as well as tools to understand micro units of economy.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
EUTH401	Euthenics 2	1	0	0
This course is designed to provide the discussion on the students' rules and regulations of the university to practice the right conduct of behavior inside and outside the university premises. It intends to teach the students on the different stages of personality development, the equivalent penalties in different academic offences and factors that influence behavioral multiple intelligences. Further, the incorporation of oral/written communication through individual and group discussions can encourage learners to ponder on the meaning of life and discover the purpose of their existence.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL631	Speech and Oral Communication	3	0	3
This is a developmental course in English communication geared towards competent, efficient, and effective interpersonal speaking across communicative contexts. It refines oral communication skills through accurate articulation of segmental phonemes, pronunciation drills, and enunciation of the suprasegmental features of speech, specifically sentential stress, and intonation. Further, it incorporates the mechanics and techniques of speech craft and delivery with emphases on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
HUMR600	Human Rights	3	0	3
This course makes the students able to know the background, main concepts of Human Rights and the philosophical thoughts and Islamic view which contribute to modern Human Rights. It makes them able to analyze what is mentioned in different kinds of Human Rights sources as Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and International Covenant on Economic, Social and Cultural Rights. It deals in the same approach with the National Sources of Human Rights such as the Constitutional Law of Kingdom of Bahrain and National Action Charter with applications as well. The course makes the students able to analyze, discuss and debate Human Rights issues in different ways.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ARAB600	Arabic Language	3	0	3
The course focuses on the fundamentals of Arabic language, such as reading, analyzing, and critique. It explains the characteristics of the required texts, which deal with different literary genres, prose and poetry. The course also focuses on the understanding and application of grammatical rules and basic morphological methods in Arabic, taking into account the correct spelling skills.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSIB636	Financial Accounting 2	3	0	3
This course provides detailed knowledge and understanding on the transactions, financial statements, and problems peculiar to the operations of partnerships and corporations as distinguished from the sole proprietorship. Special topics on book value per share and earnings per share are included.				



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BUSI632	Human Resource Management	3	0	3
This course demonstrates advanced knowledge and understanding on the management of the most important resource in an organization-human resource. It surveys contemporary techniques for managing the corporate human resource's function. Topics include planning, staffing, developing, rewarding, and maintaining organizations, jobs, and people.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BUSI713	Macroeconomics	3	0	3
This course deals in advanced macroeconomic issues focusing on the determination of GDP, unemployment, interest rates, and inflation. The students will have advanced understanding of circular flow, inflation, unemployment, nominal GDP and real GDP, aggregate demand, and aggregate supply. The course builds advanced skills to analyze the macroeconomic policies, such as fiscal and monetary policies. It enables students to apply macroeconomics tools to real world economic policy.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL711	Technical Writing	3	0	3
This is an advanced course in English academic writing designed to deal with the application of the technical writing principles with the correspondence on business, science, and technology. It aims to develop the technical writing skills and communication of the college students thru the discussions of its elements and ethics with the use of digital technologies. Furthermore, it enables students to adapt the various communication routes in the workplace, to conceptualize suitable contents of technical writing, to understand the characteristics and other methods of communication techniques, to plan and organize advanced level tasks and to work effectively and with accountability with other team members in a creative and productive manner, in any language learning scenario when achieving personal and group outcomes.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH621	Probability and Statistics	3	0	3
This course provides a demonstration of the main concepts of probability and statistics with applications. It covers identifying the theorem of probability and linked with real life problems; how to differentiate between the combination and permutation. It Explains how to find the mean and variance from the moment generating function and interpret the findings from different hypothesis tests for decision making. Finally, SPSS will be used to run the statistical measures.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BUSI712	Mathematics of Investment	3	0	3
The course provides in-depth understanding concepts, mathematical problems and solutions concerning money transaction associated with interest and time. It integrates practical and theoretical aspects of finance and investments essential for the success of all business disciplines. It also covers discussions regarding the theories and applications of simple and compound interest and simple annuity.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF711	Financial Accounting and Reporting 1	3	0	3
This course covers the development of the financial of the financial reporting framework and the standard setting bodies; regulation of the accountancy profession; the conceptual framework; and presentation of financial statements. It also includes topics on cash, accounts receivable and inventories.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
COMP721	Database Management Systems	2	2	3
This course provides the core theories principles topics of database management systems. The topics include introduction to the database theory, models, data normalization, data description languages, data manipulation languages and query design. The course covers creating tables, defining integrity and constraints, data manipulation, data selection, joins, nested queries and views.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BUSI631	Principles of Marketing	3	0	3
The course demonstrates detailed knowledge and understanding of the principles and practices of modern marketing. It emphasizes on the process of planning and executing the conception, pricing, promotion, and distribution of ideas, good, and services that satisfy individual and organizational objectives.				



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BUSI721	Quantitative Methods	3	0	3
<p>The course provides an advanced knowledge and understanding of quantitative techniques currently used in business and management. The course is designed for student to apply quantitative techniques, as well as software applications, in solving business problems and/or in making decisions. Topics include linear programming, forecasting and linear regression, queuing models, decision network analysis and decision theory.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL721	Public Speaking	3	0	3
<p>This 3-unit course deals with the academic study of public speaking, its functions in present day situations in a culturally diverse society. It develops competent communicators and prepares students for communication challenges in local, as well as global contexts. Further, it is an avenue for students to embody the 3Cs of an effective public speaker: competence, character and composure, of which are essential in the demands of business-related correspondence and communication.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF721	Financial Accounting and Reporting 2	3	0	3
<p>This course is the continuation of Financial Accounting and Reporting 1. It demonstrates advanced knowledge and understanding of the application of accounting principles covering assets, financial and non-financial. Emphasis is given on the interpretation and application of theories of accounting in relation to property, plant and equipment including depreciation methods, revaluation, and impairment of property assets, wasting assets, depletion; investments in equity and debt instruments, related party disclosures; and other types of investments such as sinking fund, cash surrender value and investment property.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF722	Corporate Governance	3	0	3
<p>This course equips students with advanced knowledge and understanding of the social responsibility, governance, and sustainability reporting frameworks of the organization. It covers topics on agency, stakeholder analysis, organizational social responsibility, scope, and approaches of governance, reporting to stakeholders, the board of directors, and the public sector governance.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSIB736	Management Information Systems	2	2	3
<p>This course provides knowledge and understanding of the concept of MIS and the impact it has on business organizations. It deals with the examination of the use of information systems to support the management activities of an organization. Topics include: the fundamentals of hardware, software, database management, systems analyses and design, data communications, transaction processing information systems, decision support systems, information reporting systems, office automation, networks, and expert systems. Case studies and several software packages will be utilized to illustrate the principles covered.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF723	Management Accounting 1	3	0	3
<p>This course focuses on modern techniques and approaches for active management of operation costs to achieve organizational efficiency and effectiveness. Specific topics cover cost management information, cost behavior; cost terms and concepts; cost classification; and cost accounting techniques.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF731	Financial Accounting and Reporting 3	3	0	3
<p>This course deals with an advanced study of fundamental assumptions, theoretical concepts and generally accepted accounting principles as discussed in the International Accounting Standards (IAS) and the International Financial Reporting Standards (IFRS); the conditions under which they may be appropriately applied and their impact on the financial statements. The course covers detailed discussion, appreciation and application of accounting principles covering liabilities and equities. Emphasis is given on the interpretation and application of theories of accounting in relation to current liabilities, non-current liabilities, and stockholders' equity accounts. It also includes topics on interim reporting.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF732	Professional Ethics	3	0	3
<p>This course provides students gain an advanced understanding of ethical standards for accountants, auditors, and financial analyst at all levels. Learn the nature and scope of ethics standards and the need for them in business and society. Review professional codes of conduct for principal governing bodies and discuss their application in real-</p>				



world situations. Thorough case studies bolster the understanding of the importance and the applicability of current ethical rules.				
Course Code	Course Title	LecHrs	Lab Hrs	Units
BSAF733	Taxation	3	0	3
This course covers advanced knowledge and understanding of the principles and concepts of taxation and the application of these principles and concepts. Topics include accounting for income tax; income for tax purposes; tax deduction; computation of taxable income; property tax; capital gains tax; social security taxes; tax liabilities; and other taxes.				
Course Code	Course Title	LecHrs	Lab Hrs	Units
BSAF734	Management Accounting 2	3	0	3
This course covers an advanced knowledge and understanding of the management accounting concepts and techniques for performance measurement and for decision making. Topics covers some specialist cost and management accounting techniques; decision-making techniques; budgeting; variance analysis; performance management systems, performance measurement, and control.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF735	Business and Commercial Law	3	0	3
This course provides advanced knowledge and understanding of business laws, regulations, and principles which influence the transaction of business in the international arena. Topics include the classification and sources of law; contracts and functions of contracts; and negotiable instruments. Business laws operating in Bahrain are also given emphasis on this course.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF736	Corporate Finance	3	0	3
The course deals with advanced concepts of corporate finance including knowledge of the instruments used by companies to raise finance. It also consists of a broad overview of the principles and theoretical framework leading to sound corporate financial management decision making issues that face modern corporate managers when making capital budgeting and capital structure decisions.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF811	Contemporary Issues in Accounting	3	0	3
This course demonstrates critical knowledge and understanding of the concepts and principles in advanced financial accounting and reporting and the application of these concepts including techniques and methodology to problems involving accounting for special transactions and their effects and presentation in the financial statements. Topics include accounting for partnerships, corporate liquidation, joint arrangements, revenue recognition, home office and branch/principal and agency transactions, business combinations and consolidations.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF812	International Financial Accounting and Reporting	3	0	3
The course focuses on detailed knowledge and understanding of the concepts and practices for foreign currency transactions; translation of foreign currency financial statements; derivatives; options. It covers topics on the preparation of the consolidated financial statements and accounting for SME.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF813	Business Process Management and Control	2	2	3
This course deals with critical understanding of key concepts and approaches to business process management and improvement. It focuses on technology-aided definition, improvement, innovation, and management of end-to-end business processes that drive business results, create value, and enable an organization to meet its business objectives with more agility. It covers topics on designing business processes, process models, and qualitative process analysis.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF814	Audit and Assurance	3	0	3
This course demonstrates detailed knowledge and understanding of the auditing and assurance theory, generally accepted Auditing and Assurance standards, audit procedures, audit reports and the responsibilities and ethics of the Auditing and Assurance profession. Topics include risk, evidence, internal controls, sampling, audit testing,				



subsequent events, professional liability, reporting statutory provisions, compilation, and review services, and reporting under government auditing and assurance standards.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF815	Financial Market and Institutions	3	0	3

This course demonstrates an in-depth understanding of major types of financial markets and financial institutions. Securities markets, commercial banks and other financial institutions are discussed. Products and services that they provide to the users and suppliers of funds are described and the risks they may face are explained. Furthermore, political, social, regulatory, and legal effects as well as demographic diversity, cultural considerations and changing global financial conditions in finance decision making are addressed.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF816	Advanced Corporate Finance	3	0	3

The course deals with the advanced concepts of corporate finance. It covers capital investment decisions, leverage and capital structure, dividends, and dividend policy, and raising capital, and short-term financial management.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF821	Cloud Accounting	2	2	3

The course provides demonstrates the application of the theory and concepts of accounting and the ways in which accounting is used in a variety of modern economic and business contexts. Students focus on the skills of recording, reporting, presenting, and interpreting financial information using a cloud accounting platform.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF822	Investment Management	3	0	3

This course provides critical understanding of the overall investment environment, including various investment alternatives, markets, information, and transactions. It covers investment processes, investment performance and evaluation, risk management, and global economic activity and industry analysis. It explores different security types, mutual funds, and bond valuation.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF823	Risk Management	3	0	3

The course provides critical understanding of the risk assessment and management techniques, methods, and models used by the organization to minimize, control, and communicate risks, including conducting various risk management protocols. This course focuses on risk identification assessment and measurement of risk including the management, monitoring, and risk mitigation.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF824	Advanced Audit and Assurance	3	0	3

The course provides critical understanding of the audit plan and audit program; audit of the sales and collection cycle; audit sampling; audit of payroll and personnel cycle; audit of inventory warehousing; audit of cash balances; completing the audit; and government financial auditing and assurance.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BUSI811	Islamic Banking and Finance	3	0	3

This course analyzes economic activities based on the economic rationale of Islamic values and Islamic law. It covers topics on economic policies, business strategies and government regulations within the context of Islamic markets. It examines how and why Islamic values determine the business climate. It provides a clear framework for analyzing the micro- and macro-economic foundations of the Islamic system.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSIB616	Research Methods	3	0	3

The course covers the core principles and methods applicable in doing business research in accounting. It helps student to undertake advanced analysis that will give a solution to a business problem or an enhancement in business operations. The course will focus on systematic collection of data and analysis of information that will result to a meaningful business research. The student develops advanced skills of communication, collaboration, and information management.



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF831	Security Analysis and Portfolio Management	2	2	3
This course deals with the study of asset pricing models and portfolio theory and critical understanding of investing in the stock market and building stock portfolios. Its emphasis is given to stock investment: fundamental analysis, technical analysis, efficient market analysis and various methods of modeling the risk associated with stock investment such as the capital asset pricing model and arbitrage pricing theory. It equips students with necessary skills to apply the principles, theories, and models of portfolio management to analyze stocks and bonds investment problems, formulate trading strategies, and manage financial portfolios. It uses stock market simulation platform to encourage students to apply their knowledge in an innovative manner.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF832	Internship	0	12	6
This course helps students to have the opportunity to develop new skills through experiential learning under the direction of a skilled practitioner. The arrangements for the working relationship must be established prior to the assignment.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF833	Capstone Project A	3	0	3
The accounting capstone project was specifically designed to encapsulate all the learning process students will gain from this course. It is considered a strategic learning phase where a case study or problem set is involved. Students are expected to apply a variety of skills, tools and knowledge to evaluate real-world case issues and endorse an accounting capstone solution or improvement at the end of the session.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF834	Data Analytics for Accounting	2	2	3
The course focuses on analytical techniques for decision making and the examination of "big data" involving accounting information. It provides hand-on experience to develop skills with select business analysis technologies.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF841	Financial Modeling	2	2	3
This course presents the theory and practice of financial management, emphasizing computer-based modeling and forecasting. It uses spreadsheets and other software products to critically analyze the impacts of financial decisions related to financial statement analysis, cash budgeting, and cost of capital determination, capital budgeting, and capital structure choices. The course covers a variety of techniques, such as sensitivity and scenario analysis, optimization methods, Monte Carlo simulation, and regression analysis.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF842	Strategic Management Accounting	3	0	3
This course demonstrates critical knowledge and understanding of the strategic management concepts and techniques with emphasis on how to create customer and shareholder value and strong competitive position for the organization. It covers topics on strategic management approach and management accounting tools and techniques to the development and use of accounting and finance information in decision making.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF843	Capstone Project B	3	0	3
The course focuses on the full completion of the accounting and finance capstone project requirement. Students undergoing this course shall submit, present, and defend the final report.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF844	Audit and Assurance in CIS Environment	2	2	3
This course complements the course in audit and assurance and is limited to the areas that have an immediate consequence to information technology (IT) as used in business. It discusses the impact of information technology on the auditor's study and evaluation of internal control with emphasis on the previously learned IT-related risks and controls in a CIS environment. It considers the audit of IT function as a whole and the audit of computerized information systems as part of the audit of the financial statements. It introduces tools and techniques in auditing				



around, auditing through, and auditing with the computer.

**Elective Courses**

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF835A	Financial Technology (FinTech)	3	0	3

This course deals with the increasing technological approaches to the main financial intermediation functions: payments, capital raising, remittances, managing uncertainty and risk, market price discovery, and mediating information asymmetry and incentives. It covers FinTech opportunity, financial innovation, encryption and information security, blockchains and cryptocurrencies, privacy and financial data.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF835B	Operations and Supply Chain Management	3	0	3

This course provides critical understanding of the theories and practices of the processes and techniques related to supply chain and operations management through exploring topics including process management, logistics, productivity and capacity management, forecasting, inventory management, production planning, purchasing and supply management, ERP (Enterprise-wide Resource Planning), quality management and control, JIT (Just in Time) and lean management and project management.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF845A	Strategic Leadership	3	0	3

The course is designed to provide detailed understanding about the role and significance of leadership in managing organizations effectively. This course will help students in understanding different strategies being used by leaders in managing business, government, and social organizations. It enables students to focus on various issues and challenges a leader encounters in managing organizations. An understanding of these different strategies, along with an exploration of one's own strengths and weaknesses will be part of this course. In this course students will examine leadership strategies of successful organizations and apply strategic and leadership models towards the success of an organization.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF845B	International Finance	3	0	3

The course provides solid understanding of international finance within a complex capital markets context. It emphasizes the managerial perspective of finance for a multinational corporation (MNC) It covers topics on international monetary system, balance of payments, foreign direct investments, cross-border acquisitions, foreign exchange market, international parity relationship, forecasting foreign exchange rates, and futures and options on foreign exchange.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF846A	Business Trends and Seminars	3	0	3

This course aims to provide an avenue for the students to learn the recent developments and business trends related to accounting, finance, and other field of business. Students will have an opportunity to work with guest faculty and business and other practitioners; and/or attend business conferences, webinars, and seminars.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
BSAF846B	Accounting for Islamic Financial Institutions	3	0	3

This course focuses on specialist knowledge and understanding of the accounting and reporting practices in Financial institutions. It explores the theoretical basis of Islamic accounting standards and regulations, and accounting concepts and principles underlying these standards.



College: College of Administrative and Financial Sciences

## MBA PROGRAMME SPECIFICATION 2021-2022

<b>8. Teaching Institution</b>	University of Technology Bahrain
<b>9. University Department</b>	College of Administrative and Financial Sciences (CAFS)
<b>10. Programme Title</b>	Master of Business Administration (MBA)
<b>11. Title of Final Award</b>	Master of Business Administration
<b>12. Modes of Attendance offered</b>	Actual classroom learning-interactive
<b>13. National Qualification Framework Level and Credit</b>	NQF Level 9 126 NQF Credits (42 ACS Credits)
<b>9. Accreditation</b>	European Council for Business Education (ECBE)
<b>10. Other external influences</b>	<p><b>Local External Influence / Reference</b></p> <p>Ministry of Education (MOE), Higher Education Council (HEC) Education and Training Quality Authority (BQA)</p> <p><b>International External Influence / Reference</b></p> <p>European Council for Business Education (ECBE) QAA-UK Subject Benchmark Statement for MBA AACSB General Business Master's Degree Programmes Bahrain National Qualifications Framework</p>
<b>11. Date of production/revision of this specification</b>	September 01, 2021
<b>12. Aims of the Programme</b>	
<p>The programme is a Master of Business Administration (MBA), which provides an advanced business education and a learning experience that incorporates the key business functional areas for the students to become effective managers and leaders of business organizations in a globally competitive and complex business environment.</p> <p><b>Programme Educational Objectives:</b></p> <p>Upon completion of the programme, MBA graduates will be able to:</p> <ol style="list-style-type: none"> <li>1. Practice effectively as management professionals by demonstrating competency in the key business functional areas and applying critical thinking, analysis and problem-solving skills to develop, implement, and evaluate solutions in complex business and economic problems requiring interdisciplinary and global perspectives; and</li> <li>2. Promote high ethical standards and professionalism by evaluating the moral, social, and environmental implications of managerial decisions and understanding the relationship between business organizations and other societal institutions.</li> </ol>	
<b>13. Learning Outcomes, Teaching, Learning and Assessment Methods</b>	
<p>Upon successful completion of the programme, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Demonstrate critical knowledge and understanding of the key functional areas of business that are</li> </ol>	



- needed by a business manager.
2. Critically analyze tools and models using various management techniques that deliver a more efficient strategic decision-making process to solve complex business problems.
  3. Initiate, communicate and lead cooperative activities to enhance entrepreneurial skills that address the need of globalization.
  4. Demonstrate the expertise required to perform independent research in the field of business and management by applying appropriate methodologies.
  5. Pursue life-long learning and promote ethical and professional behavior by taking responsibility for their work.

#### **Teaching and Learning Methods**

1. Constructive Method. Learners must be fully engaged and active in the process of constructing meaning and knowledge based on their prior knowledge and experiences through the process of doing, making, writing, designing, creating and solving. It allows teachers to implement differentiated learning, authentic assessment practices and incorporate technologies to improve individual learning experiences. It includes simulations, in-course projects, field trips, digital content, group discussions and reflections. This method strives to improve achievement by consciously developing learners' ability to consider ideas, analyze perspectives, solve problems and make decisions on their own thereby making them more responsible and independent.
2. Inquiry based Method. Learners develop cognitive skills like critical thinking and problem solving by working on questions, problems, or scenarios and formulate creative solutions. The teachers use either structured, guided, or open inquiry to facilitate learning. As a process, learners are involved in their learning by formulating questions, investigating, building their understanding, and creating meaning and new knowledge on a certain lesson. Typically, activities include laboratory sessions and research-based activities.
3. Collaborative Method. Learners are divided into small groups to learn something together and capitalize on one's other resources and skills, evaluating one another ideas, and monitoring one another's work. It allows students to actively interact by sharing experiences and take on different roles. Typically, students are provided with problems or projects that they work on together to search for understanding, meaning, or solutions and each group is expected to work together developing or formulating solutions and present the solution in class. The activities include think-pair-share, jigsaw, or round-robin which effectively engage students to complete the tasks.
4. Experiential learning method is the process of learning by doing. By engaging students to hands on experience which attempts to apply theories and knowledge learned in the classroom to real-world situations. This may include team challenges, simulations, company visits/fieldworks and other extracurricular activities. Experiential learning opportunities exist in a variety of course- and non-course-based forms and may include community service, service-learning, undergraduate research, study abroad, and culminating experiences such as internships, student teaching, and capstone projects

#### **Assessment Methods**

- Assessment is done independently for each course. Variety of assessment tools will be used to assess achievement of intended learning outcomes including but not limited to tests, exam, assignments, case analysis, presentations, projects and thesis.



## 14. Programme Structure

### MASTER OF BUSINESS ADMINISTRATION CURRICULUM PLAN EFFECTIVE SY2021-2022

#### Business Bridging Courses (PRE-MBA)

Course Code	Course Title	Units
PMBA801	Introduction to Management	3
PMBA802	Quantitative Methods for Business	3
PMBA803	Survey of Economics	3
PMBA804	Financial Accounting	3
<b>Total Units</b>		<b>12</b>

#### CORE COURSES

##### FIRST YEAR - FIRST TRIMESTER

Course Code	Course Title	Units
CMBA910	Strategic Management	3
CMBA912	Managerial Accounting	3
CMBA913	Marketing Management	3
CMBA914	Corporate Governance and Ethics	3
<b>Total Units</b>		<b>12</b>

##### FIRST YEAR - SECOND TRIMESTER

Course Code	Course Title	Units
CMBA921	Human Resource Management	3
CMBA922	Managerial Finance	3
CMBA923	Innovation and Entrepreneurship	3
CMBA924	Management Information Systems	3
<b>Total Units</b>		<b>12</b>

##### FIRST YEAR - THIRD TRIMESTER

##### Electives (06 Units) - (All First and Second Trimester Courses are pre-requisites to any Elective Courses)

Course Code	Course Title	Units
CMBA931	Business Research Method	3
CMBA932	Statistics and Decision Tools	3
MBAE933	Elective 1	3
MBAE934	Elective 2	3
<b>Total Units</b>		<b>12</b>



**SECOND YEAR -FIRST TRIMESTER**  
**(Thesis Writing 06 units)**

Course Code	Course Title	Units
MBAT999	Thesis Writing (2 trimester minimum; 3 trimesters maximum)	6
<b>Total Units</b>		<b>06</b>
<b>GRAND TOTAL Units</b>		<b>42</b>

<b>List of Elective Courses: <i>choose any two (2)</i></b>		<b>Units</b>
Data Mining and Business Analytics		3
Investment and Portfolio Management		3
Supply Chain and Logistics Management		3
Project Management Systems		3
Organizational Change and Development		3
Business Law		3
Managerial Economics		3
E Business		3

**15. Awards and Credits**

<b>Degree/ Certificate Awarded</b>	Master of Business Administration (MBA)
<b>Total Units for Degree</b>	42
<b>Total Trimesters Completed</b>	5 trimesters

**16. Personal Development Planning**

5. Conduct in-house trainings and seminars related to all functional areas of management, and the current trends and updates in the business industry;
6. Send faculty members to local and international conferences, seminars and trainings related to their fields of specialization;
7. Support faculty members to conduct research projects aligned to college research thrusts and priorities;
8. Establish partnerships and linkages where research collaborations can be made; and
9. Encourage research publication and dissemination through participation in international research conferences and forums.

**17. Admission Criteria**

**Graduate Applicants:**

Acceptance to the graduate programme as a new student depends on the following criteria:

- a. The Applicant should have a bachelor's degree with a minimum CGPA of 2.75 out of 4.00 or 2.00 out of 4.00.
- b. For an applicant who is a graduate of any baccalaureate degree with a CGPA of 2.75 out of 4.00 or 2.00 out of 4.00 or better will be exempted from taking the Pre-MBA courses provided he/she has a minimum work experience of two years post his baccalaureate degree.
- c. For an applicant who has a baccalaureate degree in business programme that was delivered in English will proceed to core courses if:
  - He/she has CGPA from B to A+ and will be exempted to take OOPT.
  - he/she has CGPA from C+ to B- will take OOPT and should get a passing score of at least 75 to proceed to core courses but if failed, he/she will proceed to pre-MBA courses.



- The applicant with CGPA of C/C-, will take pre-MBA courses
- d. Applicant who is not a graduate of a baccalaureate degree in business or a graduate of business degree but not delivered in English will take pre-MBA courses.
- e. The applicant should submit a certificate of at least one (1) year work experience or two recommendation letters from professors in undergraduate study in lieu of the work certificate;
- f. The applicant should pass the personal interview conducted by a committee;
- g. The applicant for letter b may also present a minimum score 550 in TOFEL or 6.5 in IELTS as an equivalent of OOPT.

Acceptance to the postgraduate programme as a transfer student depends on the following criteria:

- a. UTB requires as a matter of policy that a transfer postgraduate student is required to complete at least 50% of the required credit units/hours of a programme of residence at UTB.
- b. The maximum credit units/hours that are eligible for transfer credits should not exceed fifty percent (50%) of the required credits from the original degree from another university.
- c. Capstone (Thesis) course is not eligible for credit transfer; the transfer student must take this course during his/her residency at UTB.

#### 18. CGPA Requirement for Graduation

3:00 / 4:00

#### 19. Key Resources of information about the programme

4. Included in the College Catalogue
5. Uploaded on the UTB website

#### 20. Curriculum Skills Map

		Programme Learning Outcomes					
Course Code	Course Title	Core (C) Elective (E)	P1	P2	P3	P4	P5
<b>CORE COURSES and CILO MAPPING TO PILO</b>							
CMBA910	Strategic Management	C	√	√	√	√	√
CMBA912	Managerial Accounting	C	√	√	√	√	√
CMBA913	Marketing Management	C	√	√	√	√	
CMBA914	Corporate Governance and Ethics	C	√	√	√	√	√
CMBA921	Human Resource Management	C	√	√	√	√	√
CMBA922	Managerial Finance	C	√	√	√	√	√
CMBA923	Innovation and Entrepreneurship	C	√	√	√	√	
CMBA924	Management Information Systems	C	√	√		√	√
CMBA931	Business Research Method	C	√	√		√	√
CMBA932	Statistics and Decision Tools	C	√	√	√	√	
<b>ELECTIVE COURSES: (ANY TWO)</b>							
	Data Mining and Business Analytics	E	√	√		√	√
	Investment and Portfolio Management	E	√	√	√	√	
	Supply Chain and Logistics Management	E	√	√			√
	Project Management Systems	E	√	√	√	√	
	Organizational Change and Development	E	√	√	√	√	√
	Managerial Economics	E	√	√		√	
	Business Law	E	√	√			√
	E- Business	E	√	√			√



**THESIS COURSE**

MBAT999	Thesis Writing (to be completed in two trimesters minimum, maximum three Trimesters)	C	√	√	√	√	√
---------	--	---	---	---	---	---	---

**COURSE DESCRIPTION**

Course Code	Course Title	Lec Hrs.	Lab Hrs	Units
PMBA801	Introduction to Management	3	0	3
This course deals with the study of principles and foundations of management and organizations. The course covers management activities when dealing with strategic management and decision-making process, the leadership theories and provides knowledge on how to handle business environments to gain competitive advantages. It also provides awareness on the importance of team building in management environment and skills that managers need to identify and define situations, issues/or problems for a successful business environment.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
PMBA802	Quantitative Methods for Business	3	0	3
The course focuses on advanced analytical methods that help executives make sound decision for complex business problems. The course presents the application of quantitative mathematical modelling to decision making in a business management context. Topics include relations of managers and numbers, calculations and equation, quadratic equations, collecting and summarizing data, and solving management problems involving uncertainty specifically with the application of network models, assignment method, and inventory models.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
PMBA803	Survey of Economics	3	0	3
This course covers survey of both micro and macroeconomic concepts. Microeconomics topics include scarcity, positive and normative economics, economic problem, demand and supply mechanism, elasticity and market structure. Macroeconomics topics include national accounts, unemployment, business cycles, inflation, money, banking and monetary and fiscal policies.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
PMBA804	Financial Accounting	3	0	3
This course deals with the study of the theoretical accounting framework objectives of financial statements, accounting conventions, and generally accepted accounting principles relating to the preparation and presentation of financial statements for the benefit of the various users of financial statements. It covers valuation of the asset, liability, and owners' equity accounts.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CMBA910	Strategic Management	3	0	3
This course critically analyzes, evaluates and/or synthesizes drivers of effective, innovative and sustainable business strategy in organizations in a context that are often complex and not aligned. It includes critical evaluation of the strategic management processes which are long-term managerial decisions and actions that shape the organization's pursuit of competitive advantage. It covers the concepts and processes underlying environmental scanning, strategy formulation, implementation, and control.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CMBA912	Managerial Accounting	3	0	3
This course emphasizes on use of financial and accounting data as a management tool for managerial control and decision-making process. It covers perspective of how accounting and financial statements information is used as a tool by the management in carrying out its functions particularly on planning, controlling and in all aspects of decision-making.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CMBA913	Marketing Management	3	0	3
This course critically analyzes the role of comprehensive marketing plan within an organization. It focuses on the design and integration on the new marketing trends and communication of the marketing process related to key decision-making. It covers how product, price, place and promotions contribute to the marketing mix, customer value satisfaction, the international market, marketing research and marketing of service-oriented and non-profit entities. It also includes the discussion of issues affecting marketing in variable contexts that are often complex and unpredictable.				



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CMBA914	Corporate Governance and Ethics	3	0	3
The course provides critical understanding of the legal and ethical aspects of corporate governance. The course develops the abstract thinking ability of the students while dealing on issues related to ethical behavior and corporate governance. The topics include principles of corporate governance, corporate culture, ethical behavior, the role of the board and senior executives and assessing their performance, and the audit function among others.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CMBA921	Human Resource Management	3	0	3
This course critically examines the functions and roles of human resource management (HRM) in complex organizations. It investigates the process of managing people from a strategic perspective covering important areas on human resource acquisition, training and development, performance and compensation management, and labor relations. It enables students to design a strategic HRM program.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CMBA922	Managerial Finance	3	0	3
The course knowledge and understanding of the financial models, theories and concepts of financial management. It builds the essential analytical skills of the managers of the firm and investors using financial tools and techniques. It covers financial statement analysis, discounted cash flows, valuation of equity and bond, capital budgeting techniques and the risk and return on investments.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CMBA923	Innovation and Entrepreneurship	3	0	3
This course provides practical insights and solid foundation of entrepreneurship and hands-on experience in applying creativity and innovation in new ventures. The course will prepare students for the kinds of technically linked business challenges that are inherent to situations where “the answer” (a technical innovation) is being developed in parallel with “the problem” (a market need).				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CMBA924	Management Information Systems	3	0	3
The course integrates with the current Information Systems concepts and technologies. Students will learn how information systems could be used effectively at different levels of management for the purpose of decision-making process. The course will cover concepts on how information system give a business or organization a competitive edge by providing technologies that help managers plan, organize, control, and lead. Includes topics such as information systems components, decision support system, e-business concepts and implementation, enterprise resource planning and common information systems used today.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CMBA931	Business Research Methods	3	0	3
This course focuses on research methods and tools used by decision makers in organizations. It presents the critical knowledge of research intent and design, methodology and technique, data management and analysis informed by commonly used statistical methods. It provides analytical approaches that can be applied to practical issues. The course would enable students to develop and present a research proposal.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CMBA932	Statistics and Decision Tools	3	0	3
This course focuses on statistical methods and tools used by decision makers in organizations. This course introduces the topics involving descriptive statistics, sample size determination and hypothesis testing, as well as measuring and predicting relationships. The course should enable students to develop an understanding of the application and interpretation of basic data analysis techniques with an emphasis on statistical applications.				

#### ELECTIVE COURSES

Course Title	Lec Hrs	Lab Hrs	Units
Data Mining and Business Analytics	3	0	3
In this course the students will learn the state-of-the-art techniques applied in data science for mining, analysis, visualization and interpretation of data. Both statistical and machine-learning based techniques will be taught with emphasis on the application of programmable solutions, visualization, interpretation and communication of the results obtained from the application of such techniques. In addition, the students will understand the uncertainty hidden in their results due to the probabilistic nature of the statistical and machine-learning techniques.			



Course Title		Lec Hrs.	Lab Hrs	Units
Investment and Portfolio Management		3	0	3
<p>The course aims to provide an understanding of the principles and theories relevant to the process of building investment portfolios. The course covers practical applications as well as theoretical material. The course considers mean-variance portfolio theory, linear asset pricing models such as the capital asset pricing model (CAPM) and arbitrage pricing theory (APT), market efficiency, portfolio management, and fund performance.</p>				
Course Title		Lec Hrs.	Lab Hrs	Units
Supply Chain Management and Logistics Management		3	0	3
<p>This course demonstrates critical knowledge and understanding of modeling and solution techniques for planning and executing logistics and supply chain management decisions. It uses optimization and simulation techniques to extend the understanding of planning, organizing, operating, and controlling the supply chain operations. It brings together the principles of logistics management to deliver cost-effective customer service through the integration of transportation, inventory management, and materials handling. It examines inbound and outbound logistics, inventory management, warehousing, transportation systems, and logistics network design concepts.</p>				
Course Title		Lec Hrs.	Lab Hrs	Units
Project Management		3	0	3
<p>This course provides students with the modern project management foundations, technical skills, behavioral competence and strategic awareness required of a project manager. It covers project strategy and organization, project organization and culture, leadership, managing project teams, outsourcing, monitoring progress leading to a successful project closure.</p>				
Course Title		Lec Hrs	Lab Hrs	Units
Organizational Change and Development		3	0	3
<p>This course deals with the advance strategic principles and functions of management and the different skills that managers need for a successful business. It also includes the leadership patterns in the managerial hierarchy together with the internal and external forces of an organizational change and development. It also covers the analysis of organizational development and change management practice and evaluation of the relevance and implications for leading sustainable change in business. In the end, the course equips the students the necessary abilities and competencies to create and design an OD intervention.</p>				
Course Title		Lec Hrs	Lab Hrs	Units
Business Law		3	0	3
<p>This course is designed to help students analyze the legal environment in which business operates. Topics include a general overview of the nature of business law and its relationship to business ethics, laws on business organizations, law on contracts, and negotiable instruments law. This course enables students to draft and formulate legal contracts and commercial papers.</p>				
Course Title		Lec Hrs	Lab Hrs	Units
Managerial Economics		3	0	3
<p>This course is about exposing the students to a rigorous foundation in microeconomics and industrial organization. It aims to develop students' capacity to analyze the economic environments in which business entities operate and understand how managerial decisions can vary under different constraints that each economic environment places on a manager's pursuit of its goals. Its focus will be on analyzing the functioning of markets, the economic behavior of firms and other economic agents and their economic/social implications.</p>				
THESIS COURSE				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MBAT999	Thesis Writing (Minimum 2 trimesters Maximum3 trimesters)	6	0	6
<p>This capstone course allows students to conduct a deep and thoughtful investigation of developments and strategies of complex global business environment that is properly grounded on scientific methodologies. The thesis, including its defense and submission, is a required component of the MBA programme.</p>				



<b>1. Teaching Institution</b>	University of Technology Bahrain
<b>2. University Department</b>	College of Computer Studies
<b>3. Programme Title</b>	Bachelor of Science in Computer Science (BSCS)
<b>4. Title of Final Award</b>	Bachelor of Science in Computer Science
<b>5. Modes of Attendance offered</b>	Actual classroom learning-interactive
<b>6. National Qualification Framework Level and Credit</b>	NQF Level 8 594 NQF Credits (198 ACS Credits)
<b>7. Accreditation</b>	Computing Accreditation Commission (CAC) - Accreditation Board for Engineering and Technology (ABET) <i>(from October 1, 2013 until September 30, 2019)</i>
<b>8. Other External Influences</b>	<p><b>Local External Influences/References</b> Ministry of Education (MOE), Higher Education Council (HEC) Education and Training Quality Authority (BQA)</p> <p><b>International External Influences/References</b> Accreditation Board for Engineering and Technology (ABET) Association in Computing Machinery (ACM) in Computing Bologna Framework</p>
<b>9. Date of production/revision of this specification</b>	September 1, 2017
<b>10. Aims of the Programme</b>	
<p>The Computer Science Programme involves the understanding of concepts, principles, applications, and technologies of computing. It focuses on the study of data structures and algorithms, computer architecture, data communications and networking, operating systems, survey of programming languages and techniques in programming. It includes advanced topics in computing, but not limited to human computer interaction, data mining, enterprise architecture, artificial intelligence, mobile computing and animation, and elective courses.</p> <p>Graduates of the programme, three (3) to five (5) years after graduation shall be able to:</p> <ol style="list-style-type: none"> <li>1. Apply knowledge to effectively analyze and assess real life problems to develop economically viable and socially acceptable computing solutions.</li> <li>2. Demonstrate excellence in professionalism, moral and ethical conduct, interpersonal skills and adaptable communication to prevalent trends in technology and changing technology.</li> <li>3. 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> </ol>	

## 11. Learning Outcomes, Teaching, Learning and Assessment Methods

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline
3. Communicate effectively in a variety of professional contexts
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline
6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

### Teaching and Learning Methods

- Active and Engaged Learning. Students are required to attend the sessions regularly. Students learn by doing, writing, and solving. Active participation of the student's during discussion is expected. Learning is an active process, and as such, students must engage with the course materials, i.e. reading the textbook and other assigned advanced readings.
- Problem-based learning. After each topic, sample problems will be provided to students. Working in groups, students identify what they already know, what they need to know, and how and where to access new information that may lead to resolution of the problem.
- Collaborative learning. Students will be divided into groups with at least three (2) members and each group will be provided with problems or projects that they will work on together to search for understanding, meaning, or solutions Each group is expected to work together in solving particular Computing problems, discuss the algorithm of the problems, and present the solution in class.
- Discovery-based learning. During laboratory hours, students will be given experiments to work in groups where they can apply the theories and principles learned. This is an opportunity to have hands-on experience and maximize their learning through actual simulation.
- Research-based learning. This learning methodology develops the students' research skills as well as presentation skills. It provides an opportunity for critical thinking and broadens the theoretical knowledge in the lecture component of the class. It requires students to undertake capstone research and inquiry projects.

### Assessment Methods

- Assessment is through a combination of written examinations (essays, class tests, and homework) and assessed coursework (written reports, software demonstration and computer program/ software development project / programming languages), oral presentations and interpersonal communication assessed through group projects.



## 12. Programme Structure

### Bachelor of Science in Computer Science

#### Curriculum Plan Effective SY 2017-2018

#### REMEDIAL CLASSES

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
MATH300	Remedial Mathematics	3	0	0	
ENGL301	Speaking and Listening	9	0	0	
ENGL302	Grammar and Vocabulary	9	0	0	

#### FIRST YEAR

##### FIRST TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
ENGL401	English Communication Skills 1	3	0	3	
EUTH400	Euthenics 1	1	0	0	
ECON400	Introduction to Economics	3	0	3	
HUMR400	Human Rights	3	0	3	
MATH401	College Algebra	3	0	3	
CHEM400	General Chemistry1	2	2	3	
CSCI411	Introduction to Computing	2	2	3	
<b>Total Units</b>				<b>18</b>	

##### SECOND TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
ENGL402	English Communication Skills 2	3	0	3	ENGL401
HIST400	History of Bahrain and GCC Region	3	0	3	
MATH402	Plane and Spherical Trigonometry	3	0	3	MATH401
CHEM401	General Chemistry 2	2	2	3	CHEM400
CSCI421	Computer Programming 1	2	2	3	CSCI411
CSCI423	Digital Design	2	2	3	CSCI411
CSCI424	Web Content Management System	0	2	1	CSCI411
<b>Total Units</b>				<b>19</b>	

##### THIRD TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
ENGL403	Speech and Oral Communication	2	2	3	ENGL402
ARAB400A	Arabic Language	3	0	3	
EUTH401	Euthenics 2	1	0	0	EUTH400
MATH406	Differential Calculus with Analytic Geometry	5	0	5	MATH401
CSCI431	Computer Programming 2	2	2	3	CSCI421
CSCI433	Multimedia Development	2	2	3	CSCI411
<b>Total Units</b>				<b>17</b>	



**SECOND YEAR  
FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
MATH501	Integral Calculus with Differential Equation	5	0	5	MATH406
MATH503	Discrete Mathematics	3	0	3	MATH401
PHYS501	University Physics1	2	2	3	MATH406
CSCI511	Ethics in Computing	1	0	1	CSCI 411
CSCI512	Data Structures	2	2	3	CSCI431
CSCI513	Introduction to Financial Accounting	3	0	3	ECON400
<b>Total Units</b>				18	

**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
ENGL502	Technical Writing	3	0	3	ENGL402
SOCI400	Sociology	3	0	3	
MATH502	Advance Mathematics	3	0	3	MATH501
PHYS502	University Physics 2	2	2	3	PHYS501
CSCI521	Database Management Systems 1	2	2	3	CSCI512
CSCI522	Computer Organization and Architecture	2	2	3	CSCI423
<b>Total Units</b>				18	

**THIRD TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
MATH409	Probability and Statistics	3	0	3	MATH503
PHYS503	University Physics 3	2	2	3	PHYS502
ENVS400	Environmental Science	3	0	3	CHEM400
CSCI531	Object -Oriented Programming	2	2	3	CSCI512
CSCI532	System Analysis and Design	2	2	3	CSCI521
CSCI533	Data Communications and Networking 1	2	2	3	CSCI423
<b>Total Units</b>				18	

**THIRD YEAR  
FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
MATH 504	Multivariate Calculus	2	2	3	MATH501
CSCI612	Theory of Programming Languages	2	2	3	CSCI531
CSCI613	Data Communications and Networking 2	2	2	3	CSCI533
CSCI614	Database Management Systems2	2	2	3	CSCI521
CSCI615	Automata and Formal Languages	3	0	3	MATH 503
CSCI616	Computer Graphics and Animation	2	2	3	CSCI512
<b>Total Units</b>				18	



**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
MATH505	Numerical Methods and Analysis	2	2	3	MATH502
MATH509	Symbolic Logic	3	0	3	MATH409
CSCI621	Algorithm Analysis and Design	3	0	3	CSCI512
CSCI623	Operating System	2	2	3	CSCI522
CSCI624	Software Design and Development	2	2	3	CSCI532
CSCI672	Free Elective			3	CSCI612
<b>Total Units</b>				18	

**THIRD TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
MATH506	Linear Algebra	2	2	3	MATH504
CSCI631	Software Quality Assurance	3	0	3	CSCI624
CSCI633	Human Computer Interaction	3	0	3	CSCI624
CSCI634	Software Project Management	2	2	3	CSCI624
CSCI636	Visual Programming	2	2	3	CSCI612
CSCI637	Information Security and Governance	2	2	3	CSCI533
<b>Total Units</b>				18	

**FOURTH YEAR****FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
MATH507	Optimization Methods	3	0	3	MATH505
CSCI641	Mobile Programming	2	2	3	CSCI633
CSCI642	Practicum	0	0	6	CSCI634
CSCI643	Research Project A	3	0	3	CSCI634
CSCI646	Technopreneurship	3	0	3	CSCI634
<b>Total Units</b>				18	

**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
CSCI651	Data Mining	2	2	3	CSCI614
CSCI652	Artificial Intelligence	2	2	3	CSCI615
CSCI653	Research Project B	0	6	3	CSCI643
CSCI656	Special Topics in Computing	3	0	3	CSCI533
CSCI670	Elective 1			3	CSCI612, CSCI613
CSCI671	Elective 2			3	CSCI623, CSCI621
<b>Total Units</b>				18	
<b>Grand Total</b>				198	

**ELECTIVE COURSES****EMERGING TRENDS IN COMPUTER SCIENCE**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
CSCI670a	Data Science and Big Data Analytics	3	0	3	CSCI612 CSCI613
CSCI670b	Cloud Computing	3	0	3	
CSCI670c	Internet of Things	3	0	3	
CSCI670d	E-Commerce Infrastructure and	3	0	3	



	Application				
--	-------------	--	--	--	--

### SOFTWARE EXPERTISE IN COMPUTER SCIENCE

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
CSCI671a	Object Oriented Analysis and Design	2	2	3	CSCI621 CSCI623
CSCI671b	Software Maintenance	3	0	3	
CSCI671c	Software Analysis and Testing Tools	3	0	3	
CSCI671d	Compiler Construction	2	2	3	
CSCI671e	Parallel and Distributed Computing	2	2	3	

### 12. Awards and Credits

Degree/ Certificate Awarded	Bachelor's Degree
Total Units for Degree	198
Total Trimesters Completed	11

### 13. Curriculum Skills Map

Year/ Level	Course Code	Course Title	Core (C) or Option (O)	1	2	3	4	5	6
Year 1 1st Tri	ENGL401	English Communication Skills 1	(C)			√			
	MATH401	College Algebra	(C)	√					
	CHEM400	General Chemistry1	(C)	√		√		√	
	EUTH400	Euthenics1	(C)						
	ECON400	Introduction to Economics	(C)			√	√		
	HUMR400	Human Rights	(C)				√		
	CSCI411	Introduction to Computing	(C)	√		√		√	
Year 1 2nd Tri	ENGL402	English Communication Skills2	(C)			√			
	MATH402	Plane and Spherical Trigonometry	(C)	√					
	CHEM401	General Chemistry 2	(C)	√		√		√	
	HIST400	History of Bahrain and the GCC Region	(C)				√		
	CSCI421	Computer Programming 1	(C)		√			√	√
	CSCI423	Digital Design	(C)		√			√	
	CSCI424	Web Content Management System	(C)		√	√	√	√	√
Year 1 3rd Tri	ENGL403	Speech and Oral Communication	(C)			√			
	ARAB400A	Arabic Language	(C)				√		
	EUTH401	Euthenics	(C)						
	MATH406	Differential Calculus with Analytic Geometry	(C)	√					
	CSCI431	Computer Programming 2	(C)	√	√			√	√



13. Curriculum Skills Map									
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	1	2	3	4	5	6
	CSCI433	Multimedia Development	(C)	√	√	√		√	
Year 2 1st Tri	MATH501	Integral Calculus with Differential Equation	(C)	√					
	MATH503	Discrete Mathematics	(C)	√					
	PHYS501	University Physics1	(C)	√		√		√	
	CSCI511	Ethics in Computing	(C)			√	√	√	
	CSCI512	Data Structures	(C)	√	√			√	√
	CSCI513	Introduction to Financial Accounting	(C)			√	√	√	
Year 2 2nd Tri	SOCI400	Sociology	(C)				√		
	MATH502	Advanced Mathematics	(C)	√					
	ENGL502	Technical Writing	(C)			√		√	
	PHYS502	University Physics 2	(C)	√		√		√	
	CSCI521	Database Management Systems 1	(C)	√	√			√	☒
	CSCI522	Computer Organization and Architecture	(C)	√	√	√		√	
Year 2 3rd Tri	PHYS503	University Physics 3	(C)	√		√		√	
	ENVS400	Environmental Science	(C)	√					
	CSCI531	Object Oriented Programming	(C)	√	√			√	√
	CSCI532	System Analysis and Design	(C)	√	√	√			√
	CSCI533	Data Communications and Networking 1	(C)		√	√	√	√	
	MATH409	Probability & Statistics	(C)	√					
Year 3 1st Tri	MATH504	Multivariate Calculus	(C)	√		√		√	
	CSCI612	Theory of Programming Languages	(C)		√			√	√
	CSCI613	Data Communications and Networking 2	(C)	√	√	√		√	
	CSCI614	Database Management Systems2	(C)	√	√			√	√
	CSCI615	Automata and Formal Languages	(C)	√	√				√
	CSCI616	Computer Graphics and Animation	(C)	√	√			√	√
Year 3 2nd Tri	MATH505	Numerical Methods and Analysis	(C)	√		√		√	
	CSCI621	Algorithm Analysis and Design	(C)	√	√				√
	MATH509	Symbolic Logic	(C)	√				√	
	CSCI623	Operating Systems	(C)	√	√	√		√	
	CSCI624	Software Design and Development	(C)	√	√	√		√	√



13. Curriculum Skills Map									
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	1	2	3	4	5	6
		Elective 1	(E)						
Year 3 3rd Tri	CSCI631	Software Quality Assurance	(C)		√		√	√	√
	MATH506	Linear Algebra	(C)	√		√		√	
	CSCI633	Human-Computer Interaction	(C)		√		√	√	
	CSCI634	Software Project Management	(C)		√	√	√	√	√
	CSCI636	Visual Programming	(C)	√	√			√	√
	CSCI637	Information Security and Governance	(C)	√		√	√	√	
Year 4 1st Tri	CSCI641	Mobile Programming	(C)		√	√		√	√
	CSCI642	Practicum	(C)	√		√	√	√	√
	CSCI643	Research Project A	(C)	√		√	√	√	
	MATH507	Optimization Techniques	(C)	√					
	CSCI646	Technopreneurship	(C)			√	√	√	
Year 4 2nd Tri	CSCI651	Data Mining	(C)	√		√		√	√
	CSCI652	Artificial Intelligence	(C)	√		√		√	√
	CSCI653	Research Project B	(C)	√	√	√	√	√	√
		Elective 2	(E)						
		Elective 3	(E)						
	CSCI656	Special Topics in Computing	(C)	√		√	√	√	
ELECTIVES									
	CSCI670a	Data Science and Big Data Analytics	(E)	√				√	√
	CSCI670b	Cloud Computing	(E)	√		√	√	√	
	CSCI670c	Internet of Things	(E)	√	√	√			√
	CSCI670d	E-Commerce Infrastructure and Application	(E)	√		√	√		
	CSCI671a	Object Oriented Analysis and Design	(E)	√	√	√			√
	CSCI671b	Software Maintenance	(E)	√		√	√		√
	CSCI671c	Software Analysis and Testing Tools	(E)	√		√	√		√
	CSCI671d	Compiler Construction	(E)	√				√	√
	CSCI671e	Parallel and Distributed Computing	(E)	√	√				√



## Course Description

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL401	English Communication Skills 1	3	0	3

This is an introductory course in English communication designed to provide comprehensive, up-to-date and relevant instruction in the correct use of grammar. It intends to build up students' confidence in communicating their thoughts, ideas, information and messages through the functions and structures of different words, phrases, clauses, sentences, and paragraphs. In addition, the integration of language skills increases their communicative competence and prepares them for the academic and social challenges in college and beyond.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
EUTH400	Euthenics 1	1	0	0

This course is designed to bring in the policies and procedures in the university, to guide the students in the performance of their respective role and to become adept on ideals needed in their academic pursuit. Thus, students are oriented on the history, vision, mission, values and objectives of the university, the services and academic support available, the academic and non-academic policies, the different misconduct and violations with corresponding penalties in which the learning objectives are better facilitated by various classroom discussion through collaborative teamwork learning experience.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ECON400	Introduction to Economics	3	0	3

The course presents tools of economic analysis, demand and supply, price discrimination and income distribution in a systematic way which imparts intuitive appreciation of the power and scope of microeconomics. The learners are introduced to the economic realities that a country is facing today along with some statistical tools to understand these broader economic realities. The learners who have no prior exposure to this course will be to develop an understanding of the basic tools, concepts, and theories of microeconomics.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
HUMR400	Human Rights	3	0	3

This course makes the students able to know the background, main concepts of Human Rights and the philosophical thoughts and Islamic view which contribute to modern Human Rights. It makes them able to analyze what is mentioned in different kinds of Human Rights sources as Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and International Covenant on Economic, Social and Cultural Rights. It deals in the same approach with the National Sources of Human Rights such as the Constitutional Law of Kingdom of Bahrain and National Action Charter with applications as well. The course makes the students able to analyze, discuss and debate Human Rights issues in different ways.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH401	College Algebra	3	0	3

This course is designed to familiarize learners with main theories, principles and concepts of college algebra that are useful in analysis and simplification of basic and some advanced mathematical problems. Content includes functions which are polynomial, rational, exponential, logarithmic and related equations. Sketching graphs, Matrices, determinants, progressions and inequalities as applied to engineering.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CHEM400	General Chemistry 1	2	2	3

This course demonstrates atomic theories, relationships between structure and properties of matter, scientific notation, density calculation, Atomic structure and energy levels, periodic table, ions formation and chemical bonding, chemical reactions and emphasizing the chemical change, balancing equation, Discussion on gas law includes properties and application of gas laws, Acids and bases, solution and clarification of acid – base concept



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI411	Introduction to Computing	2	2	3
<p>This course covers the detailed knowledge and understanding of computer hardware and software. It includes the discussion of number system, networking and internet and the interdisciplinary science of computing. It also provides a discussion of programme development structures and algorithm and flowchart development. The laboratory focuses on configuring web browsers security, configuring E-mail security, configuring OS security and working with Microsoft Excel and Visio.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL402	English Communication Skills 2	3	0	3
<p>This is an intermediate course in English communication geared towards equipping the college students with writing skills in preparation for academic writing. It progresses from familiarizing the sentence conventions to balancing the structures of the sentence for variation and rhythm. Further, it enables students to follow the principles that govern the composition writing in achieving unity, coherence and emphasis; to improve their expository, descriptive, narrative and argumentative works and to get hold of the discipline in academic writing for future advantages by providing them the opportunity in adhering the process of writing for effective communication.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
HIST400	History of Bahrain and GCC Region	3	0	3
<p>This Course includes the history of the Kingdom of Bahrain and the Arabian Gulf region. It includes the important events in Bahrain and the Arabian Gulf region and their impact on the current situation. It covers the strategic importance of Bahrain, starting with "Ancient civilizations and passing through" the Islamic era, Bahrain's entry into Islam, Portuguese occupation, competition of powers in the 17th century and the rise of a tribe of Al-Atub. It includes the history of Bahrain under the British protection and the conventions between Bahrain and Great Britain up to British troops leaving the region. It describes the places and persons as well as the historical developments and achievement in Bahrain during the time of Al- Khalifah. It includes independence of Bahrain, issuing of the first constitutional law, reform project by His Majesty King Hamad, constitutional amendments, establishment of GCC, history of Arab Gulf states. It makes the student able to present his patriotic character through historical discussions.</p>				
Course Code	Course Title	LecHrs	Lab Hrs	Units
MATH402	Plane and Spherical Trigonometry	3	0	3
<p>This course is designed to familiarize learners with main theories, principles and concepts of plane and spherical trigonometry that are useful in analysis and simplification of some advanced mathematical problems. The course covers topics on angles and their measurement, trigonometric/circular functions, inverse trigonometric functions, identities, graphs of trigonometric functions, solutions of trigonometric equations, solutions of right and oblique plane triangles, introduction to spherical trigonometry and its applications.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CHEM401	General Chemistry 2	2	2	3
<p>This is lecture-laboratory course which includes topic on unsaturated hydrocarbons which illustrates the structure and reactions of alkanes, alkenes, alkynes, alkyl halides, alcohol, ethers, carboxylic acid, esters, aldehydes, ketones, amines and its role and behavior in the living system. It also introduces the students to the chemistry of heterocycles, carbohydrates, oil and fatty acids and amino acids, nomenclature of organic compounds, synthesis and reaction techniques</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI421	Computer Programming 1	2	2	3
<p>This course covers detailed knowledge in problem solving and algorithm development, with emphases on developing good programming habits, and programming in a modern computer language. The course familiarizes the students with the features of object-oriented programming and its applications to solve the problems. It includes a discussion of an overview of the Java language syntax, including packages, classes, methods, variables, conditional statements,</p>				



and control flow.

The laboratory focuses on the implementation of the programming theories and concepts in Java programming language using the tool Java Eclipse.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI423	Digital Design	2	2	3

This course focuses on the concept of digital design and provides an overview of the principles underlying coding systems, logic gates, digital circuits, Boolean function, and Boolean algebra. It extends to the combinational logic circuits which comprise Encoder, Decoder and Multiplexer and sequential logic circuits include Latches, flip-flops, registers, and counters. The laboratory consists of hands-on assignments on Logic Gate Designer Simulation to illustrate concepts discussed in the class and to give students the opportunity to build and test real systems.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI424	Web Content Management System	0	2	1

This course explores the use of the three most popular open-source web-based content management systems to create dynamic and flexible websites. Students explore the fundamentals of planning dynamic websites, CMS database management, developing CSS-controlled site templates, and creating database-driven websites through the planning and creation of their own topic-based sites.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL403	Speech and Oral Communication	2	2	3

This is a developmental course in English communication geared towards competent, efficient, and effective interpersonal speaking across communicative contexts. It refines oral communication skills through accurate articulation of segmental phonemes, pronunciation drills and enunciation of the supra segmental features of speech, specifically sentential stress, and intonation. Further, it incorporates the mechanics and techniques of speech craft and delivery with emphases on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ARAB400A	Arabic Language	3	0	3

The course focuses on the fundamentals of Arabic language, such as reading, analyzing, and critique. It explains the characteristics of the required texts, which deal with different literary genres, prose and poetry. The course also focuses on the understanding and application of grammatical rules and basic morphological methods in Arabic, taking into account the correct spelling skills.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
EUTH401	Euthenics 2	1	0	0

This course is designed to provide the discussion on the students' rules and regulations of the university in order to practice the right conduct of behavior inside and outside the university premises. It intends to teach the students on the different stages of personality development, the equivalent penalties in different academic offences and factors that influence behavioral multiple intelligences. Further, the incorporation of oral/written communication through individual and group discussions can encourage learners to ponder on the meaning of life and discover the purpose of their existence.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH406	Differential Calculus with Analytic Geometry	5	0	5

This course is intended to develop practical skills in differential calculus and analytic geometry. Emphasis is placed on functions, limits and continuity, fundamental concepts of analytic geometry, explicit and implicit differentiation of algebraic and transcendental functions, conics, higher derivatives, polar coordinates and its applications (equations of tangent and normal lines, sketching polynomial curves, maxima and minima problems and time rates.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI431	Computer Programming 2	2	2	3



This course covers object-oriented techniques using modern fourth generation language. Topics include arrays, recursion, exception handling, inheritance and polymorphism, file handling, and basic applets, strings, GUI, Java events. The laboratory focuses on the development of programs in Java. It starts from the concepts of arrays and progresses from exception handling to basic applets. The implementation of the programming theories and concepts is done in Java programming language using the tool Java Eclipse.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI433	Multimedia Development	2	2	3

This course provides detailed information and some advanced necessary skills on multimedia development and delivery. The course familiarizes the students with the components of multimedia, its applications, underlying techniques of incorporating multiple media, compression and sharing. Students will learn to apply the art of visual communication through the use of multimedia technologies. The laboratory focuses on training the students to implement the theoretical knowledge that they have gained in lecture along with their creativity using any multimedia software like Macromedia Flash, Autodesk Maya

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH501	Integral Calculus with Differential Equations	5	0	5

This course provides the students with knowledge and understanding of core concepts, theories and principles in evaluating definite and indefinite integrals and its applications in solving engineering and computing problems. The course also covers solutions to ordinary differential equations which can be used in modeling important applications in the scientific and engineering fields.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH503	Discrete Mathematics	3	0	3

This course introduces fundamental concepts and techniques in set theory in preparation for its many applications in computer science. Topics include logic, proofs, sets, relations, functions, graphs and trees. It simplifies and evaluates basic logic statements including compound statements, implications, inverses, converses, and contrapositives using truth tables and the properties of logic.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
PHYS501	University Physics 1	2	2	3

This course is designed to explore the concepts of motion using vectors and other mathematical models and their advanced application, such as the application of Newton's laws of motion, projectile motion, work, energy, momentum and impulse, rotational dynamics, equilibrium of a rigid body, and periodic motion.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI511	Ethics in Computing	1	0	1

This course provides exploration and analysis of a broad range of topics regarding the ethical implications of widespread use of computer technology. Topics include socio-technical computer ethics, ethics and information technology, ethics in IT configured societies, information flow privacy and surveillance, digital intellectual property, and professional ethics in computing.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI512	Data Structures	2	2	3

This course covers advanced problem solving in linear and non-linear data structures and their implementation. Topics include arrays, sorting and searching techniques, stacks, queues, linked lists, trees and graphs. In addition, it covers various strategies for choosing appropriate structures according to the system requirements. The laboratory portion covers the implementation of linear data structures such as stacks and queues and nonlinear data structure like trees and graphs using array and linked list.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI513	Introduction to Financial Accounting	3	0	3

Financial accounting examines accounting concepts, the accounting model, measurement processes, financial statements, financial analysis, monetary and fixed assets, inventory, current and long-term liabilities and equity



structures of partnerships, proprietorships and corporations.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL502	Technical Writing	3	0	3

This is an advanced course in English academic writing designed to deal with the application of the technical writing principles with the correspondence on business, science, and technology. It aims to develop the technical writing skills and communication of the college students thru the discussions of its elements and ethics with the use of digital technologies. Furthermore, it enables students to adapt the various communication routes in the workplace, to conceptualize suitable contents of technical writing, to understand the characteristics and other methods of communication techniques, to plan and organize advanced level tasks and to work effectively and with accountability with other team members in a creative and productive manner, in any language learning scenario when achieving personal and group outcomes.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
SOCI400	Sociology	3	0	3

This course is designed to expose students in a detailed approach of studying society. It intends to give emphasis on the sociological perspectives, relationships with other social sciences, the main figures in sociological development, including introduction to culture, transformation of societies, importance of socialization, social groups, deviance, and social control. Further, it incorporates the discussions on social institutions that enable the college students to understand the economic perspective from ancient to present, the evolution of education and the current viewpoint of family.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH502	Advanced Mathematics	3	0	3

This course deals with the study of complex numbers, series solutions of ordinary differential equations by power series, Bessel Function, Frobenius method. Basics of Fourier series, Fourier transform, Laplace and inverse Laplace Transforms. Using MATLAB or other mathematical software in order to solve mathematical problems

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
PHYS502	University Physics 2	2	2	3

This course is designed to explore the concepts of electricity and magnetism using the concepts of mechanics, vectors, and other mathematical models and their advanced application, such as application of Coulomb's law, Gauss's law, Ohm's law, Kirchhoff's laws, electric potential and potential difference, basic circuits, series and parallel circuits and combinations, magnetic field and flux, induced EMF, and applications such as electric motors and basic AC electric generators.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI521	Database Management System 1	2	2	3

This course provides advanced core theories and practical skills in the databases and database management systems with information technology applications. The theoretical knowledge covers Database Environment, Relational Model, Database Operations, Structured Query Language, Entity Relationship Model and Normalization. It exposes the student to the advance concepts and techniques in database and development as well provides a foundation for research in databases. The laboratory practices the Data Definition Language (DDL) Commands, Data Manipulation Language (DML) Commands, Data Query Language (DQL) Commands, Transaction Control Language (TCL) Commands, SQL Built-in Functions, Constraints, Joins, GroupBy Command, SubQueries and Data Base Objects using Oracle SQL Developer tool.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI522	Computer Organization and Architecture	2	2	3

This course integrates the advanced theoretical and practical skills in the system components and technological improvements in processor, memory, bus, and I/O operations. It also includes the discussion on operations of cache and main memory, I/O operations, bus controls, I/O interrupts and interfaces, I/O devices and characteristics. It provides the design of various computer systems and its programming languages. It also explains the internal organization of a computer system and interrupts operations through Assembly language instruction.



The laboratory uses assembly language programs to implement the editor, assembler, and debugger in the microprocessor emulator. In addition, it performs computational and I/O operations through Assembly language programming.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
PHYS503	University Physics 3	2	2	3

This course is designed to explore the concepts of heat and thermodynamics, waves and optics, relativity, molecular, atomic, and nuclear physics using the concepts of mechanics, electricity and magnetism, vectors, and other mathematical models and their advanced application, such as the application of the laws of thermodynamics, light and electromagnetic waves, Einstein's special theory of relativity, Planck's Quantum theory, de Broglie's waves, Heisenberg's Uncertainty Principle, Dirac's electron theory, Hund's Rule, and atomic models from Thompson's to Quantum Mechanical, as well as nuclear models

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENVS400	Environmental Science	3	0	3

This course is an introduction to Environmental Science focusing on interrelationships of the natural world, sustainable development with environmental, economic and societal dimensions, energy transformations, ecological process and relationships, energy flow through systems, human population growth, water processes and cycles, impacts of climate change, "green" electronic processes, energy utilization and efficiency, conventional and alternative energy sources, present day agricultural practices, biodiversity and threats by human activity, and conservation issues.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI531	Object Oriented Programming	2	2	3

This course covers the advanced concepts of object-oriented programming such as abstraction, inheritance, polymorphism and Encapsulation. Topics also include functions, pointers, overloading operators, templates, exceptions handling and Input Output streams for programming applications. The laboratory focuses on training the students with hands-on experience on C++.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI532	System Analysis and Design	2	2	3

The course describes the concepts and methods used in the analysis and design of computer-based information systems. It includes the discussion of typical computer systems life cycles, system requirements and specification, feasibility concerns, system design, fault tolerance, people and interface issues, compliance with ethical and legal standards and quality issues. The laboratory focuses on training the students with hands-on experience Microsoft Visio using UML.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI533	Data Communications and Networking 1	2	2	3

This course integrates the core theories, principles, concepts, structure, functions and components of the Internet and computer networks. The OSI and TCP/IP models are used to examine the services and the associated protocols in each layer. The concepts and structure of IPv4 addressing and subnetting, its application, operation and implementation to networks are discussed. The laboratory part makes use of a range of approaches including the Packet Tracer and GNS3 to allow students to implement static routing and critically analyze network requirements, issues and/or problems. These simulators will allow the students to build networks, use appropriate devices and IP addresses, and perform configurations.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH409	Probability and Statistics	3	0	3

This course provides a demonstration of the main concepts of probability and statistics with applications. IT also covers identifying the theorem of probability and linked with real life problems. How to differentiate between the combination and permutation, explain how to find the mean and variance from the moment generating function. Explain and interpret the findings from different hypothesis tests for decision making. Finally, SPSS will be used to run the statistical measures (e.g. hypothesis tests and regression model)



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH504	Multivariate Calculus	2	2	3
<p>This is the third part of the course in calculus focused on vector and multi-variable calculus. Topics associated with the course demonstrate advanced knowledge and understanding of the following: vectors and vector operators, calculus of functions of several variables including partial differentiation and multiple integrals, Lagrange multipliers, applications of partial differentiation, line integrals, Green's theorem, Stoke's theorem, and Divergence theorem. The course also includes laboratory components that make use of MATLAB as tool in solving problems in Multivariate Calculus.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI612	Theory of Programming Languages	2	2	3
<p>This course covers the rigorous comprehensive study of programming languages and the various concepts which will provide students a strong foundation on different programming languages. The topics includes an advance concepts of language paradigms, language design and implementation issues, related to parallelism. The laboratory focuses on training the students with hands-on experience in three different domains of languages such as Object Oriented in C++/Java, Structured C/Pascal/VB and LISP as Logic Programming Language</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI613	Data Communications and Networking 2	2	2	3
<p>This course provides an in-depth and advanced discussion of routing technology. It integrates the core theories, concepts, functions and operations of a router including the principles and applications of routing protocols. Topics include router components and configuration; Unicast and Multicast routing protocols: RIPv1, RIPv2, EIGRP, OSPF and BGP; VLSM and IPv6. The students make use of a range of approaches including the Packet Tracer, GNS3 and the actual network devices in the laboratory in performing advanced and complex network configurations using the different routing protocols and in the critical analysis of network requirements, issues and/or problems.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI614	Database Management System 2	2	2	3
<p>This course covers advanced and critical issues of database management systems. Topics include transactions, query processing and query optimization, concurrency control, and client-server architecture, data warehouse, data mining, emerging database technologies. The laboratory focuses on training the students with hands-on experience with advanced PL/SQL using Oracle. Moreover, it focuses on administrative level commands.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI615	Automata and Formal Languages	3	0	3
<p>This course covers the advanced concept of computability and mathematical models, such as finite automata, grammars and Turing machines, and the relations between these models. The topics include detailed concepts in automata theory and formal languages including grammar, finite automaton, regular expression, formal language, pushdown automaton and Turing machine.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI616	Computer Graphics and Animation	2	2	3
<p>This course covers the advanced technologies underlying the generation and display of images using computer graphics algorithms. Topics include conversion of geometric primitives, 2D and 3D geometric transformations, clipping and windowing, hidden surface and hidden line elimination, line drawing, shading, half-toning, scene modeling and animation. The Laboratory focus on providing practical experience by using Graphic tools to understand, realize and implement the concepts, theories and models learnt in the lectures. Moreover, it uses animation tools for practicing on animation.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH505	Numerical Methods and Analysis	2	2	3
<p>This course demonstrates critical knowledge and understanding of specialist theories, principles and concepts of the</p>				



study of numerical approximations and errors, numerical solutions of non-linear equations, interpolation and curve fittings, numerical differentiation and integration. The course also covers analysis of accuracy of numerical differentiation and integration methods and solution of initial value problems using Euler Method. Analysis of accuracy of Euler's method. The course also includes laboratory components that make use of MATLAB as tool in solving problems in Numerical Analysis.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSC621	Algorithm Analysis and Design	3	0	3

This course introduces advanced techniques to support the design and analysis of algorithms, focusing on practical considerations of efficiency. Topics include the mathematical tools such as recurrence relations and asymptotic bounds that are necessary for the analysis of algorithm's Time and Space complexity. The various algorithmic design strategies like Brute Force algorithm, Greedy, Divide and Conquer and Dynamic Programming with applications on fundamental computing problems like sorting, searching, decision and optimization.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH509	Symbolic Logic	3	0	3

This course discusses the advanced concepts of symbolic logic that studies correct reasoning much like the formal languages used in mathematics. Moreover, the course puts demands on and helps to develop linguistic, quantitative, and abstract reasoning skills. Students learn to apply these concepts through the use of formal languages for truth-functional and quantificational logic, truth tables, and formal derivations.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI623	Operating System	2	2	3

This course provides advanced and detailed information about the components and functionalities of operating systems. Topics include operating system structures, process management & scheduling, memory management, virtual memory management, deadlocks, file systems, directory structure, protection, security and distributed operating systems. In laboratory, the various operating system commands are illustrated using DOS, Cygwin tools and the implementation of scheduling, memory management and page replacement algorithms using Java.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI624	Software Design and Development	2	2	3

This course demonstrates the advanced concepts in software design paradigms; identify software requirements and use Computer Aided Software Engineering in designing and developing efficient software application. The course covers an in-depth survey of software process, project management, project metrics, project scheduling, risk management, software testing and software quality assurance. The course also covers the implementation of the proposed system using structured programming, software reviews, software testing techniques and strategies, software maintenance. The laboratory focuses on providing students with hands-on experience using different tools to design a mini project such as Microsoft Visio, Visual Studio and others.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH506	Linear Algebra	2	2	3

This course use specialist level skills to relate to and adapt main and core theories and concepts in the study of matrices and determinants, and their applications in numerical solutions of systems of linear equations. It also includes important topics such as linear transformations, eigenvalues and eigenvectors, complex vectors and matrices and numerical linear algebra. In the laboratory, MATLAB is use as mathematical software and solutions to a variety of mathematical problems are determined.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI631	Software Quality Assurance	3	0	3

This course discusses advanced concepts of software quality and techniques in software quality assurance, particularly software testing and validation. It presents the in-depth interplay between testing, quality assurance and quality engineering to ensure the quality of the software. This course covers software quality and assurance framework, testing concepts and issues, verification and validation, inspection, software reliability, quality models



and measurement and formal methods.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI633	Human Computer Interaction	3	0	3

This course discusses advanced theories and techniques in Human-Computer Interaction (HCI) systems with variety of methods to evaluate computational abilities. It includes interface evaluation techniques, human-centered software evaluation and development, graphical user interface (GUI), Models of the systems, HCI aspects of multimedia systems, implementation, and evaluations of HCI Models and groupware systems.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI634	Software Project Management	2	2	3

This course focuses on the advanced management and development of software project management techniques and methods. It covers project definition, project scheduling, team management, software measurement and estimation techniques, risk analysis, project management tools and software process models, process measurement, software project planning, cost estimation and scheduling, project management tools, factors influencing productivity and success. Furthermore, it covers the software process standards and process implementation, software contracts and intellectual property and approaches to maintenance and long-term software development. The laboratory focuses on training the students with hands-on experience on UML using Ms Visio.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI636	Visual Programming	2	2	3

This course discusses advanced skills needed for software development using Visual Programming tools. It includes programs with graphical interfaces, Visual Basic Controls and Dialog Boxes, Decision Structures, Loops, Classes and Objects, Arrays and Collections and Exceptional Handling and Debugging. Moreover, it covers event-driven programming and interaction with databases using LINQ .net Library. The laboratory focuses on training the students with hands-on experience on Visual Studio. The students will gain skills on Visual programming using the Integrated Development Environment (IDE) Visual Studio.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI637	Information Security Governance	2	2	3

This course provides an advanced discussion of the importance of information security and support to protect the information resources of an organization as well as the fundamentals of security in the networked environment. Topics include information security (IS) issues; coverage of risks and vulnerabilities; detection of and reaction to threats to information resources; encryption and authentication technologies such as classical cipher design and analysis, modern private key block cipher design, details, public key encryption algorithms, digital signatures and hash functions, key management, X.509 certificates and certificate authorities; Point-to-Point Protocol (PPP): Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP).

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI641	Mobile Programming	2	2	3

This course provides a systematic explanation of advanced concepts in mobile programming and provide an in-depth coverage of mobile systems and its application development. It includes the mobile user interface, application development standards and the mobile technology. Moreover, it covers various mobile computing applications using common paradigms in mobile application frameworks and development environments. The Lab component of the course includes developing apps based on UI widgets, custom views and layouts, notification, toast, menus, dialog, list and data storage using Java and XML in Android Studio.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI642	Practicum	0	0	6

This course provides the students with an opportunity to be immersed in the actual work environment along their specialization. The students are required to complete 240 hours on-site training to get hands on experience of



working in the industry.

Course Code	Course Title	LecHrs	Lab Hrs	Units
CSCI643	Research Project A	3	0	3

This course provides guideline that will enable the students to effectively prepare a research project in relation to their field of specialization. It deals with the development of the essential ideas, concepts, principles, tools, and skills needed for developing a research project. It includes Research issues, System Analysis, System Design, Project tracking and control of a research project. It makes the research proposal, problem statement, literature survey, research methodology of a research project.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH507	Optimization Methods	3	0	3

The course takes an advanced and unified view of optimization and covers the main areas of application of core optimization algorithms. The topics include linear optimization, robust optimization, network flows, dynamic optimization, and non-linear optimization.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI646	Technopreneurship	3	0	3

This course is discussing the rapid evolving world on creative new venture in internet marketing. The road to entrepreneurial success is long, winding and strewn with pitfalls, obstacles, and blind turns. This course intends to give an understanding of Technopreneurship fundamentals. The topics covered include in information age, developing business plan, financing and marketing business, innovation and creativity, financial management, and products identification. Students will be exposed to various case studies on successful entrepreneurs.

Course Code	Course Title	LecHrs	Lab Hrs	Units
CSCI651	Data Mining	2	2	3

This course explores how the advanced and complex data mining interdisciplinary field brings together techniques from databases, statistics, machine learning, and information retrieval. It covers the field of data mining and includes the topics data preprocessing, predictive modeling, model evaluation techniques, clustering, classification, and association analysis and anomaly detection. The Laboratory session discusses Weka, data mining tool and using that perform preprocessing, classifications and clustering based on real word data sets.

Course Code	Course Title	LecHrs	Lab Hrs	Units
CSCI652	Artificial Intelligence	3	0	3

This course covers advanced theories and state-of-the-art techniques of artificial intelligence. Artificial intelligence (AI) is a research field that studies how to realize the intelligent human behaviors on computers. The AI is to make a computer that can learn, plan, and solve problems autonomously. The topics include AI methodology and fundamentals, supervised and unsupervised learning, decision tree learning and natural language processing. The laboratory focuses on training the students with building models using various artificial intelligence algorithms in Python.

Course Code	Course Title	LecHrs	Lab Hrs	Units
CSCI653	Research Project B	3	0	3

This course provides opportunity to students to integrate their knowledge by implementing a significant software system as part of a systems development project including proper documentation in a real-world environment.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI656	Special Topics in Computing	3	0	3

This course provides theoretical advanced knowledge on current trends, issues, and development in the field of Information Technology to make aware the changes in technologies, applications and systems. Topics include Biometrics, RFID, GIS, Cryptography, Web mining, Cloud Computing and Grid Computing. It exposes the current trends in Emerging technologies like Biometrics, RFID, GIS, elaborate on how cryptographic and web mining algorithms work, and discuss on new trends in computing field called Cloud Computing and Grid Computing.



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI670A	Data Science and Big Data Analytics	3	0	3
<p>This course discusses the advanced concepts underlying data science and bog data analysis. It utilizes several open-source tools to address big data challenges, taking an “Open” or technology-neutral approach. It covers concepts, and techniques needed to deal with various aspects of data science practice, including data collection, cleansing, mangling, and integration, exploratory data analysis, predictive modeling, descriptive modeling, data product creation, machine learning algorithms, evaluation, effective communication, and Data Visualization.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI670B	Cloud Computing	3	0	3
<p>This course covers advanced concepts required to build a cloud infrastructure based on a cloud computing reference model. The reference model includes five fundamental layers, namely, physical, virtual, control, and service and three cross-layer functions, namely business continuity, security, and service management for building a Cloud infrastructure. Furthermore, Topics included Cloud infrastructure reference model, resource management, programming models, application models, system characterizations, and implementations, deployment of Cloud computing systems. Moreover, this course takes an open approach to describe concepts and technologies.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI670C	Internet of Things	3	0	3
<p>This course discusses the advanced and current leading IoT technologies for building IoT solutions for Smart Homes, Smart Campus etc., using IoT sensor, actuators and devices. It covers key concepts of IoT (Internet of Things) and challenges related to digital transformation, security and privacy. The course examines the evolution of the Internet and how the interconnection of people, processes, data, and things are transforming every industry.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI670D	E-Commerce Infrastructure and Application	3	0	3
<p>This course discusses the advanced concepts in electronic commerce applications, and technologies which are used to conduct business on the World Wide Web. It analyzes the essentials of e-commerce, its infrastructure, current business models in business-to-customers (B2C) and business-to-business (B2B) transactions, security and quality assurance, web site design strategies, payment systems, and various issues--Internet marketing, legal, regulatory, technological, social, and ethical--which relate to electronic business, systems development issues, electronic data interchange, web-based marketing, e-supply chains, e-procurement, e-marketplace, customer relationship management, and web-enabling mobile. The course also allocates hands-on practices covering client-side (front-end) and server-side (back-end) applications in web-based business information systems. E-Business case studies are used to signify the advantages and the challenges related to integrating ecommerce applications.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI671A	Object Oriented Analysis and Design	2	2	3
<p>This course demonstrates the principles, design, and implementation of Object-Oriented Analysis according to real life mini projects. The course emphasis with requirements gathering &amp; end with implementation of modularity, abstraction, encapsulation and manage requirements. Those are used subsequently to enforce Object Oriented concepts that produce a reusable design of the system that adapts to change. The course also covers how to analyze and design classes, their relationships to each other in order to build a model of the problem domain and use common UML diagrams throughout this process, such as use-case, class, activity &amp; other diagrams.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI671B	Software Maintenance	3		3
<p>This course covers and explains the advanced concepts of why software maintenance is a cost-effective option for system evolution, where the different actions of the software reengineering process take place, such as reverse engineering and program restructuring. How legacy systems can be assessed to decide if they should be scrapped, maintained, re-engineered, or replaced to improve maintainability, extensibility, and software adaptability to</p>				



different environments. Furthermore, it covers techniques and methods of software maintenance, classification of changes, costs of maintenance, maintenance process models, program analysis, program slicing, object flow graphs, class diagram recovery and delta debugging

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI671C	Software Analysis and Testing Tools	3	0	3

This course covers the advanced aspects of software development besides programming, such as diagnosing bugs, testing, and debugging, comprise over 50% of the cost of software development. Furthermore, topics are covered software maintenance tasks such as debugging, maintaining, and testing. Many diverse techniques exist with their own strengths and limitations. Those Techniques as well as imparts hands-on experience with applying them to automate testing, debugging, and finding bugs in complex real-world programs.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI671D	Compiler Construction	2	2	3

This course covers the issues that arise in the design and construction of translators for programming languages. The topics covered include structure of one-pass and multiple-pass compilers; symbol table management; lexical analysis; traditional and automated parsing techniques, including recursive descent and LR parsing; syntax-directed translation and semantic analysis; run-time storage management; intermediate code generation; introduction to optimization; and code generation. In the laboratory part some of the theories, methods and principles treated in the theory part are illustrated and practically applied and the laboratory focuses on training the students with hands-on experience on GCC/ANTLR.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI671E	Parallel and Distributed Computing	2	2	3

This course provides an overview of distributed and parallel systems, with special emphasis on cloud-based implementations. Topics include distributed systems and models, computer clusters for scalable parallel computing, virtual machines, cloud platform architecture, service-oriented architectures, grid computing, and peer-to-peer computing. The Laboratory exercises will be used to demonstrate various aspects of parallel and distributed computing in NetBeans with various simulation tools like Vmware, Hadoop, CloudSIM and IBM's Bluemix.



## BSIT PROGRAMME SPECIFICATION

<b>1. Teaching Institution</b>	University of Technology Bahrain
<b>2. University Department</b>	College of Computer Studies
<b>3. Programme Title</b>	Bachelor of Science in Information Technology (BSIT)
<b>4. Title of Final Award</b>	Bachelor of Science in Information Technology
<b>5. Modes of Attendance offered</b>	Full-time/ Part-time, actual classroom learning-interactive
<b>6. Accreditation</b>	None
<b>7. Other external influences</b>	<p><b>Local External Influences/References</b> Ministry of Education (MOE), Higher Education Council (HEC), Education and Training Quality Authority in the Kingdom of Bahrain (BQA)</p> <p><b>International External Influences/References</b> Accreditation Board for Engineering and Technology (ABET), Association for Computing Machinery (ACM) in Computing, Quality Assurance Accreditation (QAA) in Computing</p>
<b>8. Total NQF Credits</b>	Level 8 540 Credits units
<b>9. Date of production/revision of this specification</b>	September, 2022
<b>10. Aims of the Programme</b>	
<p>The BSIT Programme prepares students to take a leading role in Information Technology by equipping them with the needed knowledge and competencies to effectively evaluate, manage, and maintain computing resources. It has strong emphasis on knowledge to successfully apply information technology theory and principles to address real world opportunities and challenges. The curriculum covers various IT domains which include Information management, Integrated systems, Platform technologies, System paradigm, Networking, User experience design, Software Development, Web and Mobile systems and Project Management. BSIT course is offered with three Majors: Major in Networking and Cyber Security, Major in Data Analytics and Artificial Intelligence and Major in Applications Development.</p> <p>The Programme goals are:</p> <ol style="list-style-type: none"> <li>1. To produce globally competitive graduates and IT professionals with a comprehensive knowledge of various programming languages that make up today's computing and networking systems.</li> <li>2. To equip graduates with the essential skills in designing and developing different IT projects and computing applications in response to the complex and future demands of the small and medium enterprises as well as global companies.</li> </ol>	

3. To develop innovative skills in dealing with the computing needs of the industry, using modern data processing systems, information technology tools, techniques and management.

The Programme Educational Objectives:

1. Apply knowledge to effectively analyze and assess real life problems to develop economically viable and socially acceptable IT solutions.
2. Demonstrate excellence in professionalism, moral and ethical conduct, interpersonal skills and adaptable communication to prevalent trends in technology and changing technology
3. Work productively as successful IT professionals in diverse career paths including supportive and leadership roles on multidisciplinary teams or be active in higher studies.

#### **11. Learning Outcomes, Teaching, Learning and Assessment Methods**

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline
3. Communicate effectively in a variety of professional contexts
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline
6. Use systematic approaches to select, develop, apply, integrate and administer secure computing technologies to accomplish user goals.

#### **Teaching and Learning Methods**

- Active and Engaged Learning. Students are required to attend the sessions regularly. Students learn by doing, writing, and solving. Active participation of the student's during discussion is expected. Learning is an active process, and as such, students must engage with the course materials, i.e. reading the textbook and other assigned advanced readings.
- Problem-based learning. After each topic, sample problems will be provided to students. Working in groups, students identify what they already know, what they need to know, and how and where to access new information that may lead to resolution of the problem.
- Collaborative learning. Students will be divided into groups with at least three (2) members and each group will be provided with problems or projects that they will work on together to search for understanding, meaning, or solutions Each group is expected to work together in solving particular Computing problems, discuss the algorithm of the problems, and present the solution in class.
- Discovery-based learning. During laboratory hours, students will be given experiments to work in groups where they can apply the theories and principles learned. This is an opportunity to have hands-on experience and maximize their learning through actual simulation.
- Research-based learning. This learning methodology develops the students' research skills as well as presentation skills. It provides an opportunity for critical thinking and broadens the theoretical knowledge in the lecture component of the class. It requires students to undertake capstone research and inquiry projects.



### Assessment Methods

- Assessment is through a combination of written examinations (essays, class tests, and homework) and assessed coursework (written reports, software demonstration and computer program/software development project / programming exercises), oral presentations and interpersonal communication assessed through group projects.

### 12. Programme Structure

## Bachelor of Science in Information Technology Curriculum Plan Effective SY 2021 - 2022

### REMEDIAL CLASSES

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
MATH500	Remedial Mathematics	3	0	0	
ENGL501	Effective Speaking	9	0	0	
ENGL502	Grammar and Effective Writing	9	0	0	

### FIRST YEAR

#### FIRST TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
CSIT611	Introduction to Computers and IT	2	2	3	
ENGL611	English Communication Skills 1	3	0	3	
ARAB600	Arabic Language	3	0	3	
EUTH400	Euthenics1	1	0	0	
MATH611	College Algebra	3	0	3	
ECON600	Introduction to Economics	3	0	3	
HUMR600	Human Rights	3	0	3	
<b>Total Units</b>				<b>18</b>	

#### SECOND TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
CSIT621	Computer Programming 1	2	2	3	CSIT611
CSIT622	Multimedia Development	2	2	3	CSIT611
CSIT623	Digital Design	2	2	3	CSIT611
ENGL621	English Communication Skills 2	3	0	3	ENGL611
EUTH401	Euthenics2	1	0	0	EUTH400
MATH622	Discrete Mathematics	3	0	3	MATH611
HIST600	History of Bahrain and GCC Region	3	0	3	
<b>Total Units</b>				<b>18</b>	



**THIRD TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
CSIT631	Computer Programming 2	2	2	3	CSIT621
CSIT632	Web Content Management	1	2	2	CSIT621
CSIT633	Introduction to Green Computing	3	0	3	CSIT611
CSIT634	Computer Organization and Architecture	2	2	3	CSIT623
MATH631	Differential Calculus with Analytic Geometry	5	0	5	MATH611
ENGL631	Speech and Oral Communication	2	2	3	ENGL621
<b>Total Units</b>				<b>19</b>	

**SECOND YEAR****FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
CSIT711	Web Design Techniques and Tools	2	2	3	CSIT632
CSIT712	Data Structures	2	2	3	CSIT631
CSIT713	Data Communications and Networking 1	2	2	3	CSIT634
CSIT714	Professional Ethics in IT	2	0	2	CSIT621
CSIT715	Introduction to Management Information System	3	0	3	CSIT611
MATH621	Probability and Statistics	3	0	3	MATH631
<b>Total Units</b>				<b>17</b>	

**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
ENGL711	Technical Writing	3	0	3	ENGL621
CSIT721	Database Management Systems 1	2	2	3	CSIT712
CSIT722	Operating Systems	2	2	3	CSIT712
CSIT723	Data Communications and Networking 2	2	2	3	CSIT713
CSIT724	System Administration	2	2	3	CSIT714
CSIT725	Technopreneurship	3	0	3	CSIT715
<b>Total Units</b>				<b>18</b>	

**THIRD TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
CSIT731	Blockchain Technology and Application	3	0	3	CSIT722
CSIT732	System Analysis and Design	2	2	3	CSIT721
CSIT733	IT Project Management	2	2	3	CSIT724
CSIT734	Cyber Security for Information Technology	3	0	3	CSIT724
CSIT735	Cryptographic Algorithms	3	0	3	CSIT724
CSIT736	Specialization Elective 1			3	CSIT721
<b>Total Units</b>				<b>18</b>	



**THIRD YEAR  
FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
CSIT811	Software Design and Development	2	2	3	CSIT732
CSIT812	Human Computer Interaction	3	0	3	CSIT732
CSIT813	Information Security and Governance	2	2	3	CSIT733
CSIT814	Specialization Elective 2			3	CSIT736
CSIT815	Specialization Elective 3			3	
CSIT816	Specialization Elective 4			3	
<b>Total Units</b>				<b>18</b>	

**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
CSIT821	System Integration	3	0	3	CSIT811
CSIT822	Embedded System	3	0	3	CSIT812
CSIT823	Mobile Programming	2	2	3	CSIT812
CSIT824	Specialization Elective 5			3	CSIT816
CSIT825	Specialization Elective 6			3	
CSIT826	Specialization Elective 7			3	
<b>Total Units</b>				<b>18</b>	

**THIRD TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
CSIT831	Practicum in IT	0	12	6	CSIT821
CSIT832	Research Project A	3	0	3	CSIT823
CSIT833	Elective – 1: Software Expertise	2	2	3	CSIT821
CSIT834	Specialization Elective 8			3	CSIT826
CSIT835	Specialization Elective 9			3	
<b>Total Units</b>				<b>18</b>	

**FOURTH YEAR  
FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
CSIT841	Internet of Things	3	0	3	CSIT833
CSIT842	Research Project B	0	6	3	CSIT832
CSIT843	Elective 2: Intelligent Systems	2	2	3	CSIT833
CSIT844	Specialization Elective 10			3	CSIT835
CSIT845	Specialization Elective 11			3	
CSIT846	Specialization Elective 12			3	
<b>Total Units</b>				<b>18</b>	
<b>Grand Total</b>				<b>180</b>	



## LIST OF ELECTIVES

### Elective 1 - Software Expertise

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	Pre-requisite
CSIT833- A	Parallel and Distributed Computing	2	2	3	CSIT821
CSIT833 - B	Enterprise Resource Planning	2	2	3	
CSIT833 - C	Compiler Construction	2	2	3	

### Elective – 2 Intelligent Systems

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	Pre-requisite
CSIT843 – A	Artificial Intelligence and Machine Learning	2	2	3	CSIT833
CSIT843 - B	Expert Systems	2	2	3	
CSIT843 - C	Principles of Data Science	2	2	3	

## SPECIALIZATION ELECTIVES

### *Networking and Cyber Security Specialization*

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	Pre-requisite
CSIT736 – CS	<i>Introduction to Digital Forensics</i>	3	0	<b>3</b>	CSIT721
CSIT814 – CS	<i>Network Security</i>	2	2	<b>3</b>	CSIT736CS
CSIT815 – CS	<i>Security Methods and Practices</i>	3	0	<b>3</b>	
CSIT816 – CS	<i>Ethical Hacking</i>	2	2	<b>3</b>	
CSIT824 – CS	<i>Wireless Networks</i>	2	2	<b>3</b>	CSIT816CS
CSIT825 – CS	<i>System and Security Administration</i>	2	2	<b>3</b>	
CSIT826 – CS	<i>Intrusion Detection and Prevention Systems</i>	2	2	<b>3</b>	
CSIT835 – CS	<i>Cloud Computing</i>	3	0	<b>3</b>	CSIT826CS
CSIT836 – CS	<i>Applied Cyber Security</i>	3	0	<b>3</b>	
CSIT844 – CS	<i>Advanced Cryptographic Algorithms</i>	2	2	<b>3</b>	CSIT836CS
CSIT845 – CS	<i>TCP/IP and Routing</i>	2	2	<b>3</b>	
CSIT846 – CS	<i>Mobile Internet Technology</i>	2	2	<b>3</b>	

### *Data Analytics and Artificial Intelligence Specialization*

Course Code	COURSE TITLE	LEC	LAB	UNITS	Pre-requisite
CSIT736 – DA	<i>Database Management Systems 2</i>	2	2	<b>3</b>	CSIT721
CSIT814 – DA	<i>Data Integration</i>	2	2	<b>3</b>	CSIT736DA
CSIT815 – DA	<i>Database Administration</i>	2	2	<b>3</b>	
CSIT816 – DA	<i>Data Mining and Analysis in</i>	2	2	<b>3</b>	



	<i>Information Technology</i>				
CSIT824 – DA	<i>Web mining and Information Retrieval</i>	2	2	<b>3</b>	CSIT816DA
CSIT825 – DA	<i>Big Data Analytics in Business Intelligence</i>	2	2	<b>3</b>	
CSIT826 – DA	<i>Big Data Architecture and Design</i>	2	2	<b>3</b>	
CSIT835 – DA	<i>Cloud Based Data Distribution and Virtualization</i>	3	0	<b>3</b>	CSIT826DA
CSIT836 – DA	<i>Principles of Data Science and Visualization</i>	2	2	<b>3</b>	
CSIT844 – DA	<i>Computational Thinking with Python</i>	2	2	<b>3</b>	CSIT836DA
CSIT845 – DA	<i>Data Interpretation and Statistical Analysis in Information Technology</i>	3	0	<b>3</b>	
CSIT846 – DA	<i>Database Driven Web Applications</i>	2	2	<b>3</b>	

<b>Applications Development Specialization</b>					
<b>Course Code</b>	<b>COURSE TITLE</b>	<b>LEC</b>	<b>LAB</b>	<b>UNITS</b>	<b>Pre-requisite</b>
CSIT736 – AD	<i>Database Management Systems 2</i>	2	2	<b>3</b>	CSIT721
CSIT814 – AD	<i>Python Programming</i>	2	2	<b>3</b>	CSIT736AD
CSIT815 – AD	<i>Database Administration</i>	2	2	<b>3</b>	
CSIT816 – AD	<i>Agile Project Management</i>	3	0	<b>3</b>	
CSIT824 – AD	<i>C# Programming and Application development</i>	2	2	<b>3</b>	CSIT816AD
CSIT825 – AD	<i>Mobile Application Development</i>	2	2	<b>3</b>	
CSIT826 – AD	<i>Computer Graphics and Applications</i>	2	2	<b>3</b>	
CSIT835 – AD	<i>Cloud Computing</i>	3	0	<b>3</b>	CSIT826AD
CSIT836 – AD	<i>Server Side Programming</i>	2	2	<b>3</b>	
CSIT844 – AD	<i>Software Quality Assurance</i>	3	0	<b>3</b>	CSIT836AD
CSIT845 – AD	<i>.Net Technologies</i>	2	2	<b>3</b>	
CSIT846 – AD	<i>Software Testing Tools</i>	2	2	<b>3</b>	

<b>12. Awards and Credits</b>	
Degree/ Certificate Awarded	Bachelor's Degree in Information Technology
Total Units for Degree	180 ACS (540 NQF Credits)
Total Trimesters Completed	10



### 13. Personal Development Planning

1. Conduct in-house trainings and seminars on current trends in computing, such as Network Security, Web Design and Techniques, ERP and Database Administration
2. Send faculty members to local and international conferences, seminars and trainings related to their fields of specialization.
3. Support faculty members to conduct research projects aligned to college research thrusts and priorities.
4. Establish partnerships and linkages where research collaborations can be made.
5. Encourage research publication and dissemination through participation in international research conferences and fora.

### 14. Admission Criteria

Admission to UTB International University - Bahrain (UTB) is open to all qualified applicants.

Criteria for Admission to the University

Admissions Criteria for Undergraduate Students

For First Year Undergraduate Applicants

Acceptance to the University depends on the following admissions requirements:

1. Completely filled out an admission application form.
2. Minimum secondary school scores 60% or its equivalent.
3. Online Placement Test (Oxford Online Placement Test (OOPT)) result
4. Submission of all required documents stated in the Admissions Policy.

To be admitted to any undergraduate programme, the applicant must satisfy the minimum secondary school grades or its equivalent without the need to take the UTB placement test and remediation classes of English, and Math, as shown in the following table:

<b>Subtest Component for Bahraini, KSA, Kuwait, Qatar, Yemen, Switzerland, USA, and Ecuador Qualification</b>		<b>Programme</b>		
		<i>BSME, BSEnE, BSIT, BSBI, BSAF</i>	<i>BSCS, BSIE</i>	<i>BSIB</i>
Mathematics	Science/ Technical/General Track	At least 70% or C	At least 70% or C	At least 60% or D
	Commercial Track	At least 80% or B	At least 80% Or B	At least 60% or D
	Literature and Islamic Tracks	At least 80% or B	All must undergo remedial mathematics	At least 60% or D
Science		60	60	N/A
English		At least 80 or B	At least 80 or B	At least 80 or B

\*This is applicable to Bahraini and similarly equivalent qualification



<b>Subtest Component for Other Qualification (Indian, Pakistan, and West African)</b>		<b>Programme</b>		
		<i>BSME, BSEnE, BSIT, BSBI, BSAF</i>	<i>BSCS, BSIE</i>	<i>BSIB</i>
Mathematics	Science/ Technical/General Track	At least 51 or C1	At least 51 or C1	At least 41 or C2
	Commercial Track	At least 71 or B1	At least 71 or B1	At least 41 or C2
	Literature and Islamic Tracks	At least 71 or B1	All must undergo remedial mathematics	At least 41 or C2
Science		60	60	N/A
English		At least 71 or B1	At least 71 or B1	At least 71 or B1

\*Note: Science component is subject to the evaluation of the Dean.

For the undergraduate applicant who did not meet the minimum required secondary school grades in Mathematics and English or its equivalent, his/her admissions depends on the following criteria:

<b>Programme</b>	<b>Secondary School Grade</b>	<b>Placement Test in English (OOPT)</b>	<b>Remarks</b>
All Programmes	60-79 % grade in English	Score $\geq$ 55 %	No need for remediation in English
		Score < 55 %	Remediation in English
BSIE, BSCS	Literature and Islamic Tracks	N/A	Remediation in Math
	Commercial Track: Score 60-79%	N/A	Remediation in Math
BSME, BSEnE, BSIT, BSBI, BSAF	For Commercial Track: Score 60-79% in Math For Scientific and technical Track: Score 60-69% in Math	N/A	Remediation in Math
	For Science score <60%	N/A	Tutorial class in general sciences
BSIB	Score <60% in Math	N/A	Remediation in Math
All Programmes	CGPA <60% for Bahraini and KSA CGPA <41% for Indian and Pakistan	N/A	Will be subjected to 5% admission rule of UTB (As explained under note)



\*This is applicable to Bahraini and similarly equivalent qualification

a. Secondary Grade in English

A qualified applicant for all programmes whose secondary school grade in English is within 60-79%, needs to take the placement test in English (OOPT). If the OOPT test result is 55 or above, applicant will not take remediation course in English. However, if the result is lower than 55, applicant will take remediation course in English.

b. TOEFL/IELTS

Qualified applicant who attains the score of at least 500 (173 CBT, 61 iBT) for TOEFL, or with a score of 5.5 for IELTS, is exempted to sit the required English placement test.

c. Secondary Grade in Math

A qualified applicant for BSME, BSEnE, BSIT, BSBI, and BSAF programmes who has a secondary grade score in Math of 60-79% for commercial track and 60-69% for scientific and technical tracks and lower than 60% for the BSIB programme must take the remediation course in Math. All qualified applicants for BSCS and BSIE programmes coming from the literature and Islamic tracks must take the remediation course in Math.

d. Secondary Grade in Science

A qualified applicant for BSME, BSIE, BSEnE, BSCS, BSIT, BSBI, and BSAF programmes who has a secondary grade score in science of lower than 60% must take tutorial class in general science before taking any university-level science course.

Note: UTB can accept new students equivalent to 5% of the total enrollment where student applicant has a CGPA below 60% but not lower than 50% from Bahraini Schools; below 41% but not lower than 33% from Indian and Pakistan Schools; and for other non-Bahrain based Schools, it will be based on the passing mark of the school. The 5% is subject to strict evaluation by the dean and the applicant's score in the OOPT and the secondary school grades.

B. For Undergraduate Transfer Student Applicants

Application Requirements:

1. Completely filled out an admission application form
2. Official Transcript of Records (TOR) from the university previously attended. Rules and regulations of the HEC-Bahrain regarding the authentication of foreign certificates and private school certificates are to be applied when necessary.
3. Course description of all completed courses for which transfer credit is sought (authenticated by the originating university)
4. Certificate of Transfer from the university previously attended stamped by MOE, if any.
5. Withdrawal Certificate stamped by MOE
6. Submission of all required documents stated in the admissions policy.
7. The applicant should have a good moral standing from the university from which he/she is transferring.



#### Admissions Requirements:

- a. For Bahrain and KSA qualifications, the applicant should have at least a secondary school average of 60%. For non-Bahrain secondary qualifications (Indian and Pakistan) the applicant should have at least 41% secondary school average; and for other non-Bahraini qualifications please refer to the table of cut-off.
- b. If the applicant has taken and passed courses in English and Mathematics in the previous university, the applicant will be exempted in taking the remedial courses in both English and Mathematics. The applicant may proceed to mainstream university courses and is eligible to apply for credit transfer.
- d. If the applicant has not taken any courses in English, he/she shall take the OOPT. If the results on the two parts of OOPT results is passed, he will proceed to university English courses, otherwise, he/she will enroll the remedial courses in English where he/she fails.
- d. If the applicant has not taken any course in Mathematics, the basis for evaluation whether remedial course in mathematics is required or not is the score in mathematics subjects in his/her last year in the secondary school certificate using the table presented earlier.

The transfer of course credits is accepted at UTB provided that courses applied for crediting are equivalent to the courses where credit will be transferred. Practicum (Internship) course is eligible for credit transfer with the same practicum (internship) course from other university or re-admitted student from UTB.

The University requires the undergraduate student to complete at least 50% of the required credit units/hours of a programme in residence at UTB. The maximum credit units/hours that are eligible for transfer credits should not exceed two-thirds (66%) of the required credit units/hours based on his/her original degree from another university.

#### 15. Key Resources of information about the programme

1. Included in the University Course Catalogue
2. Included in the College Catalogue
3. Uploaded on the UTB website

#### 16. Curriculum Skills Map

Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Program Learning Outcomes					
				1	2	3	4	5	6
Year 1 1st Tri	ENGL611	English Communication Skills1	(C)			√			
	MATH611	College Algebra	(C)	√					
	ARAB600	Arabic Studies	(C)				√		
	EUTH400	Euthenics1	(C)						



16. Curriculum Skills Map									
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Program Learning Outcomes					
				1	2	3	4	5	6
	ECON600	Introduction to Economics	(C)	√			√	√	
	HUMR600	Human Rights	(C)				√		
	CSIT 611	Introduction to Computers and IT	(C)	√		√		√	√
Year 1 2nd Tri	ENGL621	English Communication Skills2	(C)			√			
	EUTH401	Euthenics2	(C)						
	MATH622	Discrete Mathematics	(C)	√					
	HIST600	History of Bahrain and the GCC Region	(C)			√			
	CSIT621	Computer Programming1	(C)		√			√	√
	CSIT622	Multimedia Development	(C)		√	√		√	√
Year 1 3rd Tri	CSIT623	Digital Design	(C)		√			√	
	ENGL631	Speech and Oral Communication	(C)			√			
	MATH631	Differential Calculus with Analytic Geometry	(C)	√					
	CSIT631	Computer Programming2	(C)	√	√			√	√
	CSIT632	Web Content Management	(C)		√	√	√	√	√
	CSIT633	Introduction to Green Computing	(C)	√	√	√	√	√	
Year 2 1st Tri	CSIT634	Computer Organization and Architecture	(C)	√	√	√		√	
	MATH621	Probability and Statistics	(C)	√					
	CSIT711	Web Design Techniques and Tools	(C)	√	√	√			√
	CSIT712	Data Structures	(C)	√	√			√	√
	CSIT713	Data Communications and Networking 1	(C)		√	√	√	√	
	CSIT714	Professional Ethics in IT	(C)			√	√	√	
Year 2 2nd Tri	CSIT715	Introduction to Management Information System	(C)	√	√	√	√		
	ENGL711	Technical Writing	(C)			√		√	
	CSIT721	Database Management Systems 1	(C)	√	√			√	√
	CSIT722	Operating Systems	(C)	√	√	√		√	
	CSIT723	Data Communications and Networking 2	(C)	√	√	√		√	
	CSIT724	System Administration	(C)	√	√			√	√
Year 2 3rd Tri	CSIT725	Technopreneurship	(C)	√		√	√	√	
	CSIT731	Blockchain technology and Application	(C)	√		√		√	
	CSIT732	System Analysis and Design	(C)	√	√	√			√
	CSIT733	IT Project Management	(C)		√	√	√	√	√
	CSIT734	Cyber Security for Information Technology	(C)	√	√	√		√	√
	CSIT735	Cryptographic Algorithms	(C)	√	√			√	√
	CSIT736	Specialization Elective 1	(E)						



16. Curriculum Skills Map									
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Program Learning Outcomes					
				1	2	3	4	5	6
Year 3 1st Tri	CSIT811	Software Design and Development	(C)	√	√	√		√	√
	CSIT812	Human-Computer Interaction	(C)		√		√	√	
	CSIT813	Information Security and Governance	(C)	√		√	√	√	
	CSIT814	Specialization Elective 2	(E)						
	CSIT815	Specialization Elective 3	(E)						
	CSIT816	Specialization Elective 4	(E)						
Year 3 2nd Tri	CSIT821	System Integration	(C)	√				√	√
	CSIT822	Embedded Systems	(C)	√	√	√			√
	CSIT823	Mobile Programming	(C)		√	√		√	√
	CSIT824	Specialization Elective 5	(E)						
	CSIT825	Specialization Elective 6	(E)						
	CSIT826	Specialization Elective 7	(E)						
Year 3 3rd Tri	CSIT832	Practicum in IT	(C)	√	√	√	√	√	√
	CSIT833	Research Project A	(C)	√		√	√	√	
	CSIT834	Elective – 1 : Software Expertise	(E)						
	CSIT835	Specialization Elective 8	(E)						
	CSIT836	Specialization Elective 9	(E)						
Year 4 1st Tri	CSIT841	Internet of Things	(C)	√	√	√			√
	CSIT842	Research Project B	(C)	√	√	√	√	√	√
	CSIT843	Elective 2: Intelligent Systems	(E)						
	CSIT844	Specialization Elective 10	(E)						
	CSIT845	Specialization Elective 11	(E)						
	CSIT846	Specialization Elective 12	(E)						
<b>COMPULSORY ELECTIVES</b>									
	CSIT834 – A	Parallel and Distributed Computing	(E)	√	√				√
	CSIT834 – B	Enterprise Resource Planning	(E)	√		√		√	
	CSIT834 – C	Compiler Construction	(E)	√				√	√
	CSIT843 – A	Artificial Intelligence and Machine Learning	(E)	√		√		√	√
	CSIT843 – B	Expert Systems	(E)	√	√	√			
	CSIT843 – C	Principles of Data Science	(E)	√				√	√
<b>SPECIALIZATION ELECTIVES</b>									
	CSIT736 – CS	Introduction to Digital Forensics	(E)	√	√			√	√



16. Curriculum Skills Map									
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Program Learning Outcomes					
				1	2	3	4	5	6
	CSIT814 – CS	Network Security	(E)	√		√	√	√	√
	CSIT815 – CS	Security Methods and Practices	(E)	√	√	√		√	√
	CSIT816 – CS	Ethical Hacking	(E)	√	√	√		√	√
	CSIT824 – CS	Wireless Networks	(E)	√	√	√		√	√
	CSIT825 – CS	System and Security Administration	(E)	√	√	√		√	√
	CSIT826 – CS	Intrusion Detection and Prevention Systems	(E)	√	√	√		√	√
	CSIT835 – CS	Cloud Computing	(E)	√		√	√	√	
	CSIT836 – CS	Applied Cyber Security	(E)	√	√		√	√	√
	CSIT844-CS	Advanced Cryptographic Algorithms	(E)	√	√	√		√	√
	CSIT845-CS	TCP/IP and Routing	(E)	√	√	√		√	√
	CSIT846-CS	Mobile Internet Technology	(E)	√	√	√		√	√
	CSIT736 – DA	Database Management Systems 2	(E)	√	√			√	√
	CSIT814 – DA	Data Integration	(E)	√	√			√	√
	CSIT815 – DA	Database Administration	(E)	√	√			√	√
	CSIT816 – DA	Data Mining and Analysis in Information Technology	(E)	√		√		√	√
	CSIT824 – DA	Web Mining and Information Retrieval	(E)	√		√		√	√
	CSIT825 – DA	Big Data Analytics in Business Intelligence	(E)	√		√		√	√
	CSIT826 – DA	Big Data Architecture and Design	(E)	√	√		√	√	√
	CSIT835 – DA	Cloud-based Data Distribution and Virtualization	(E)	√		√	√	√	
	CSIT836 – DA	Principles of Data Science and Visualization	(E)	√				√	√
	CSIT844 – DA	Computational Thinking with Python	(E)	√	√			√	√
	CSIT845 – DA	Data Interpretation and Statistical Analysis in Information Technology	(E)	√				√	√
	CSIT846 – DA	Database Driven Web Applications	(E)	√	√			√	√
	CSIT736 – AD	Database Management Systems 2	(E)	√	√			√	√
	CSIT814 – AD	Python Programming	(E)	√	√			√	√
	CSIT815 – AD	Database Administration	(E)	√	√			√	√
	CSIT816 – AD	Agile Project Management	(E)	√	√			√	√
	CSIT824 – AD	C# Programming and Application Development	(E)	√	√			√	√
	CSIT825 – AD	Mobile Application Development	(E)	√	√	√		√	√
	CSIT826 – AD	Computer Graphics and Applications	(E)	√	√			√	√



16. Curriculum Skills Map									
Year/ Level	Course Code	Course Title	Core (C) or Optio n (O)	Program Learning Outcomes					
				1	2	3	4	5	6
	CSIT835 – AD	Cloud Computing	(E)	√		√	√	√	
	CSIT836 – AD	Server Side Programming	(E)	√				√	√
	CSIT844 – AD	Software Quality Assurance	(E)		√		√	√	√
	CSIT845 – AD	.Net Technologies	(E)	√	√			√	√
	CSIT846 – AD	Software Testing Tools	(E)	√		√	√		√

### Course Description

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL611	English Communication Skills 1	3	0	3
<p>This is an introductory course in English communication designed to provide comprehensive, up-to-date and relevant instruction in the correct use of grammar. It intends to build up students' confidence in communicating their thoughts, ideas, information and messages through the functions and structures of different words, phrases, clauses, sentences and paragraphs. In addition, the integration of language skills increases their communicative competence and prepares them for the academic and social challenges in college and beyond.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH611	College Algebra	3	0	3
<p>This course is designed to familiarize learners with main theories, principles and concepts of college algebra that are useful in analysis and simplification of basic and some advanced mathematical problems. Content includes functions which are polynomial, rational, exponential, logarithmic and related equations. Sketching graphs, Matrices, determinants, progressions and inequalities as applied to engineering.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ARAB600	Arabic Language	3	0	3
<p>The course focuses on the fundamentals of Arabic language, such as reading, analyzing, and critique. It explains the characteristics of the required texts, which deal with different literary genres, prose and poetry. The course also focuses on the understanding and application of grammatical rules and basic morphological methods in Arabic, taking into account the correct spelling skills.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
EUTH400	Euthenics 1	1	0	0
<p>This course is designed to bring in the policies and procedures in the university, to guide the students in the performance of their respective role and to become adept on ideals needed in their academic pursuit. Thus, students are oriented on the history, vision, mission, values and objectives of the university, the services and academic support available, the academic and non-academic policies, the different misconduct and violations with corresponding penalties in which the learning objectives are better facilitated by various classroom discussion through collaborative team work learning experience.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ECON600	Introduction to Economics	3	0	3
<p>The course presents tools of economic analysis, demand and supply, price discrimination and income distribution in a systematic way which imparts intuitive appreciation of the power and scope of microeconomics. The learners are introduced to the economic realities that a country is facing today along with some statistical tools to understand these broader economic realities. The learners who have no prior exposure to this course will be to develop an understanding of the basic tools, concepts and theories of microeconomics.</p>				



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
HUMR600	Human Rights	3	0	3
<p>This course makes the students able to know the background, main concepts of Human Rights and the philosophical thoughts and Islamic view which contribute in modern Human Rights. It makes them able to analyze what is mentioned in different kinds of Human Rights sources as Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and International Covenant on Economic, Social and Cultural Rights. It deals in the same approach with the National Sources of Human Rights such as the Constitutional Law of Kingdom of Bahrain and National Action Charter with applications as well. The course makes the students able to analyze, discuss and debate Human Rights issues in different ways.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT611	Introduction to Computers and IT	2	2	3
<p>This course covers the detailed knowledge and understanding of computer hardware and software. It includes the discussion of number system and its application in IT, networking and internet and the interdisciplinary science of computing. It also provides a discussion of programme development structures and algorithm and flowchart development. The laboratory focuses on configuring web browsers security, configuring E-mail security, configuring OS security and working with Microsoft Excel and Visio.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL621	English Communication Skills 2	3	0	3
<p>This is an intermediate course in English communication geared towards equipping the college students with writing skills in preparation for academic writing. It progresses from familiarizing the sentence conventions to balancing the structures of the sentence for variation and rhythm. Further, it enables students to follow the principles that govern the composition writing in achieving unity, coherence and emphasis; to improve their expository, descriptive, narrative and argumentative works and to get hold of the discipline in academic writing for future advantages by providing them the opportunity in adhering the process of writing for effective communication.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
EUTH401	Euthenics 2	1	0	0
<p>This course is designed to provide the discussion on the students' rules and regulations of the university in order to practice the right conduct of behavior inside and outside the university premises. It intends to teach the students on the different stages of personality development, the equivalent penalties in different academic offences and factors that influence behavioral multiple intelligences. Further, the incorporation of oral/written communication through individual and group discussions can encourage learners to ponder on the meaning of life and discover the purpose of their existence.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH622	Discrete Mathematics	3	0	3
<p>This course introduces fundamental concepts and techniques in set theory in preparation for its many applications in computer science. Topics include logic, proofs, sets, relations, functions, graphs and trees. It simplifies and evaluates basic logic statements including compound statements, implications, inverses, converses, and contra positives using truth tables and the properties of logic.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
HIST600	History of Bahrain and the GCC Region	3	0	3
<p>This Course includes the history of the Kingdom of Bahrain and the Arabian Gulf region. It includes the important events in Bahrain and the Arabian Gulf region and their impact on the current situation. It covers the strategic importance of Bahrain, starting with "Ancient civilizations and passing through" the Islamic era, Bahrain's entry into Islam, Portuguese occupation, competition of powers in the 17<sup>th</sup> century and the rise of a tribe of Al-Atub. It includes the history of Bahrain under the British protection and the conventions between Bahrain and Great Britain up to British troops leaving the region. It describes the places and persons as well as the historical developments and achievement in Bahrain during the time of Al- Khalifah. It includes independence of Bahrain, issuing of the first constitutional law, reform project by His His Majesty King Hamad, constitutional amendments, establishment of GCC, history of Arab Gulf states. It makes the student able to present his patriotic character through historical discussions</p>				



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT621	Computer Programming 1	2	2	3
<p>This course covers detailed knowledge in problem solving and algorithm development, with emphases on developing good programming habits, and programming in a modern computer language. The course familiarizes the students with the features of object-oriented programming and its applications to solve the problems. It includes a discussion of an overview of the Java language syntax, including packages, classes, methods, variables, conditional statements, and control flow. The laboratory focuses on the implementation of the programming theories and concepts in Java programming language using the tool Java Eclipse.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT422	Multimedia Development	2	2	3
<p>This course provides detailed information and some advanced necessary skills on multimedia development and delivery. The course familiarizes the students with the components of multimedia, its applications, underlying techniques of incorporating multiple media, compression and sharing. Students will learn to apply the art of visual communication through the use of multimedia technologies. The laboratory focuses on training the students to implement the theoretical knowledge that they have gained in lecture along with their creativity using Autodesk Maya.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT623	Digital Design	2	2	3
<p>This course focuses on the concept of digital design and provides an overview of the principles underlying coding systems, logic gates, digital circuits, Boolean function and Boolean algebra. It extends to the combinational logic circuits which comprise Encoder, Decoder and Multiplexer and sequential logic circuits include Latches, flip-flops, registers and counters. The laboratory consists of hands-on assignments on Logic Gate Designer Simulation to illustrate concepts discussed in the class and to give students the opportunity to build and test real systems</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL631	Speech and Oral Communication	2	2	3
<p>This is a developmental course in English communication geared towards competent, efficient and effective interpersonal speaking across communicative contexts. It refines oral communication skills through accurate articulation of segmental phonemes, pronunciation drills and enunciation of the suprasegmental features of speech, specifically sentential stress and intonation. Further, it incorporates the mechanics and techniques of speech craft and delivery with emphases on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH631	Differential Calculus with Analytic Geometry	5	0	5
<p>This course is intended to develop practical skills in differential calculus and analytic geometry. Emphasis is placed on functions, limits and continuity, fundamental concepts of analytic geometry, explicit and implicit differentiation of algebraic and transcendental functions, conics, higher derivatives, polar coordinates and its applications (equations of tangent and normal lines, sketching polynomial curves, maxima and minima problems and time rate.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT631	Computer Programming 2	2	2	3
<p>This course covers object-oriented techniques using modern fourth generation language. Topics include arrays, recursion, exception handling, inheritance and polymorphism, file handling, and basic applets, strings, GUI, Java events. The laboratory focuses on the development of programs in Java. It starts from the concepts of arrays and progresses from exception handling to basic applets. The implementation of the programming theories and concepts is done in Java programming language using the tool Java Eclipse.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT632	Web Content Management	1	2	2
<p>This course explores the use of the three most popular open source web-based content management systems to create dynamic and flexible websites. Students explore the fundamentals of planning dynamic websites, CMS</p>				



database management, developing CSS-controlled site templates, and creating database-driven websites through the planning and creation of their own topic-based sites.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT633	Introduction to Green Computing	3	0	3

This course empowers students to reduce the energy use, waste, and other environmental impacts of IT systems while reducing life cycle costs, thereby improving competitive advantage. Students learn how to measure computer power usage, minimize power usage, procure sustainable hardware, design green data centers, recycle computer equipment, configure computers to minimize power, use virtualization to reduce the number of servers, and other green technologies. Students also learn how to make green IT an integral part of organizational culture and planning, to foster long term sustainable information technology.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT634	Computer Organization and Architecture	2	2	3

This course provides critical knowledge and understanding of computer organization and architecture, functions, components and their interconnections. It also describe theories, principles and concepts of memory hierarchy and organization; I/O peripherals and interfacing; instruction sets, addressing modes and access; processor structure and functions including interrupts, RISC and CISC. Through laboratory and in-course project, the students will creatively implement complex applications of microprocessor-based systems using Assembly language

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH621	Probability and Statistics	3	0	3

This course provides a demonstration of the main concepts of probability and statistics with applications. IT also covers identifying the theorem of probability and linked with real life problems. How to differentiate between the combination and permutation, Explain how to find the mean and variance from the moment generating function. Explain and interpret the findings from different hypothesis tests for decision making. Finally, SPSS will be used to run the statistical measures (e.g. hypothesis tests and regression model)

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT5711	Web Design Techniques and Tools	2	2	3

This course is an overview of the modern Web technologies used for Web Development focusing on the technologies, protocols and architectures of the Internet. The topics include History of the Web, Hypertext Markup Language (HTML), Extensible HTML (XHTML), Cascading Style Sheets (CSS), and JavaScript, technology used in web services (WSDL, SOAP, UDDI). In the lab, students are taught in practice how to design web applications using HTML, XHTML, CSS, JavaScript and web services.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT712	Data Structures	2	2	3

This course covers advanced problem solving in linear and non-linear data structures and their implementation. Topics include static and dynamic arrays, sorting and searching techniques, stacks, queues, linked lists, trees and graphs. In addition, it covers various strategies for choosing appropriate structures according to the system requirements. The laboratory portion covers the implementation of linear data structures such as stacks and queues and nonlinear data structure like trees and graphs using array and linked list.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT713	Data Communications and Networking 1	2	2	3

This course integrates the core theories, principles, concepts, structure, functions and components of the Internet and computer networks. The OSI and TCP/IP models are used to examine the services and the associated protocols in each layer. The concepts and structure of IPv4 addressing and subnetting, its application, operation and implementation to networks are discussed. The laboratory part makes use of a range of approaches including the Packet Tracer and GNS3 to allow students to implement static routing and critically analyze network requirements, issues and/or problems. These simulators will allow the students to build networks, use appropriate devices and IP



addresses, and perform configurations.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT714	Professional Ethics in IT	2	0	2

This course provides exploration and analysis of a broad range of topics regarding the ethical implications of widespread use of computer technology. Topics include socio-technical computer ethics, ethics and information technology, ethics in IT configured societies, information flow privacy and surveillance, digital intellectual property, and professional ethics in computing.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT715	Introduction to Management Information Systems	3	0	3

The course integrates with the current Information Systems concepts and technologies. Students will learn how information systems could be used effectively at different levels of management for the purpose of decision-making process. The course will cover concepts on how information system gives a business or organization a competitive edge by providing technologies that help managers plan, organize, control, and lead. Includes topics such as information systems components, decision support system, e-business concepts and implementation, enterprise resource planning and common information systems used today.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
ENGL711	Technical Writing	3	0	3

This is an advanced course in English academic writing designed to deal with the application of the technical writing principles with the correspondence on business, science, and technology. It aims to develop the technical writing skills and communication of the college students thru the discussions of its elements and ethics with the use of digital technologies. Furthermore, it enables students to adapt the various communication routes in the workplace, to conceptualize suitable contents of technical writing, to understand the characteristics and other methods of communication techniques, to plan and organize advanced level tasks and to work effectively and with accountability with other team members in a creative and productive manner, in any language learning scenario when achieving personal and group outcomes.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT721	Database Management Systems 1	2	2	3

This course provides advanced core theories and practical skills in the databases and database management systems with information technology applications. The theoretical knowledge covers Database Environment, Relational Model, Database Operations, Structured Query Language, Entity Relationship Model and Normalization. It exposes the student to the advance concepts and techniques in database and development as well provides a foundation for research in databases. The laboratory practices the Data Definition Language (DDL) Commands, Data Manipulation Language (DML) Commands, Data Query Language (DQL) Commands, Transaction Control Language (TCL) Commands, SQL Built-in Functions, Constraints, Joins, GroupBy Command, Subqueries and DataBase Objects using Oracle SQL Developer tool.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT722	Operating Systems	2	2	3

This course provides advanced and detailed information about the components and functionalities of operating systems. Topics include operating system structures, process management and scheduling, memory management, virtual memory management, deadlocks, file systems, directory structure, protection, security and distributed operating systems. In laboratory, the various operating system commands are illustrated using DOS, Cygwin tools and the implementation of scheduling, memory management and page replacement algorithms using Java.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT723	Data Communications and Networking 2	2	2	3

This course provides an in-depth and advanced discussion of routing technology. It integrates the core theories, concepts, functions and operations of a router including the principles and applications of routing protocols. Topics include router components and configuration; Unicast and Multicast routing protocols: RIPv1, RIPv2, EIGRP, OSPF and BGP; VLSM and IPv6. The students make use of a range of approaches including the Packet Tracer, GNS3 and the



actual network devices in the laboratory in performing advanced and complex network configurations using the different routing protocols and in the critical analysis of network requirements, issues and/or problems.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT724	System Administration	2	2	3

This course provides critical knowledge and experience for IT professionals. Students will have the knowledge required to assemble components based on customer requirements. Install, configure and maintain devices. PCs and software for end users understand the basics of networking and security/forensics properly and safely diagnose, resolve and document common hardware and software issues while applying troubleshooting skills Student will also provide appropriate customer support; understand the basics of virtualization, desktop Imaging and deployment.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT725	Technopreneurship	3	0	3

This course discusses on creative new venture in internet marketing. The road to entrepreneurial success is long, winding and strewn with pitfalls, obstacles and blind turns. This course intends to give an understanding of technopreneurship fundamentals. The topics covered include in information age, developing business plan, financing and marketing business, innovation and creativity, financial management, and products identification. Students will be exposed to various case studies on successful entrepreneurs.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT731	Blockchain Technology and Applications	3	0	3

This course will discuss the limitations of the Internet for business and economic activity and explain how blockchain technology represents the way forward. This course includes what blockchain is, how it works, and why it is revolutionary. Moreover, it discusses as mining, hashing, proof-of-work, public key cryptography, and the double-spend problem. Also describe seven design principles for blockchain technology, and the challenges facing the people developing it, players in the blockchain ecosystem, and consider students own role in stewarding the blockchain revolution.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT732	System Analysis and Design	2	2	3

The course describes the concepts and methods used in the analysis and design of computer-based information systems. It includes the discussion of typical computer systems life cycles, system requirements and specification, feasibility concerns, system design, fault tolerance, people and interface issues, compliance with ethical and legal standards and quality issues. The laboratory focuses on training the students with hands-on experience Microsoft Visio using UML.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT733	IT Project Management	2	2	3

This course focuses on the management and development of software project management techniques and methods. It covers project definition, project scheduling, team management, software measurement and estimation techniques, risk analysis, project management tools and software process models, process measurement, software project planning, cost estimation and scheduling, project management tools, factors influencing productivity and success. Furthermore, it covers the software process standards and process implementation, software contracts and intellectual property and approaches to maintenance and long-term software development. In the laboratory focuses on training the students with hands-on experience on UML using Ms Visio

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT734	Cyber Security for Information Technology	3	0	3

This course is designed to provide concepts and practices cyber security with sufficient coverage of essential topics required for entry-level cyber security certifications. An effective cyber security defense consists of four distinct challenges: securing the infrastructure, securing devices, securing local networks, and securing the perimeter.



Overcoming these challenges requires a detailed understanding of the concepts and practices within each realm. This course covers each challenge individually for greater depth of information, with real-world scenarios that show what vulnerabilities look like in everyday computing scenarios.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT735	Cryptographic Algorithms	3	0	3

This course emphasizes systematic authentication to follow the advancement of cryptographic techniques and security protocols. It exposes the various protocols and cryptographic functions to estimate the strength of security using advance encryption/decryption algorithm. It also discusses the security enhancement techniques such as symmetric and asymmetric encryption and key exchange management. In addition, it investigates the various complex security issues and develops a high-level security mechanism in contemporary networked computer systems. The laboratory portion implements the complex level conversion of plain text to cipher text using RSA algorithm, Diffie-Hellman-Key-Exchange algorithm and Stream Cipher Technique to embed security in Java. In addition, it identifies the suitable cryptographic algorithms for a given problem to resolve security issues.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT736 AD	<i>Database Management Systems 2</i>	2	2	3

This course covers advanced and critical issues of database management systems. Topics Include query processing and query optimization, concurrency control, and client-server architecture, data warehouse, data mining, emerging database technologies. The laboratory focuses on training the students with hands-on experience with advanced PL/SQL using Oracle. Moreover, it focuses on administrative level commands

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT736 CS	<i>Introduction to Digital Forensics</i>	3	0	3

This course provides a comprehensive overview of incident response & computer forensics. It addresses incident detection, response, and those aspects of computer forensics pertinent to the investigation of trade secret theft, economic espionage, copyright infringement, piracy, and fraud. It discusses the procedures for gathering, preserving, and analyzing forensic evidence and its application to both computer and network incident response forensics.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT736 DA	<i>Database Management Systems 2</i>	2	2	3

This course covers advanced and critical issues of database management systems. Topics Include query processing and query optimization, concurrency control, and client-server architecture, data warehouse, data mining, emerging database technologies. The laboratory focuses on training the students with hands-on experience with advanced PL/SQL using Oracle. Moreover, it focuses on administrative level commands

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT811	Software Design and Development	2	2	3

This course demonstrates the advanced concepts in software design paradigms; identify software requirements and use Computer Aided Software Engineering in designing and developing efficient software application. The course covers an in-depth survey of software process, project management, project metrics, project scheduling, risk management, software testing and software quality assurance. The course also covers the implementation of the proposed system using structured programming, software reviews, software testing techniques and strategies, software maintenance. The laboratory focuses on providing students with hands-on experience using different tools to design a mini project such as Microsoft Visio, Visual Studio and others.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT812	Human Computer Interactions	3	0	3

This course discusses advanced theories and techniques in Human-Computer Interaction (HCI) systems with variety of methods to evaluate computational abilities. It includes interface evaluation techniques, human-centered software evaluation and development, graphical user interface (GUI), Models of the systems, HCI aspects of multimedia systems, implementation and evaluations of HCI Models and groupware systems.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT813	Information Security and Governance	2	2	3

This course provides a discussion of the importance of information security and support to protect the information resources of an organization as well as the fundamentals of security in the networked environment. Topics include



information security (IS) issues; coverage of risks and vulnerabilities; detection of and reaction to threats to information resources; encryption and authentication technologies such as classical cipher design and analysis, modern private key block cipher design, details, public key encryption algorithms, digital signatures and hash functions, key management, X.509 certificates and certificate authorities; Point-to-Point Protocol (PPP): Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP).

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT814 AD	<i>Python Programming</i>	2	2	3

This course discusses core programming concepts like data structures, conditionals, loops, variables, functions, object-oriented programming, and graphical user interface-driven applications. It also includes an overview of the various tools available for writing and running Python and gets students coding quickly. The laboratory focuses on training the students with hands-on coding exercises using commonly used data structures, writing custom functions, and reading and writing to files.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT814 DA	<i>Data Integration</i>	2	2	3

This course covers the impact data integration has on data analytics and how that impact is managed across the spectrum of data management and data analytics. Learners research technologies common to the IT industry that are used to integrate data from multiple resources. Learners gain an understanding of those data integration tools and techniques and apply them to data analysis. The laboratory focuses on training the students with hands-on experience on several open-source software tools, including Apache Hadoop.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT814 CS	Network Security	2	2	3

This course covers discusses the advanced and essentials concepts of security in the networked environment. It includes compliance and operational security, threats and vulnerabilities, controls and protection methods, and encryption and authentication technologies to attain secured working environment. In laboratory part, Cisco networking simulation tools are used to simulate, configure and apply Cisco compatible authentication protocols on the simulated networks

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT815 AD	Database Administration	2	2	3

This course focuses on the roles and responsibilities of database administrators and explores how they contribute to data management. Learners determine how database design, administration, regulations, and standards impact effective data management processes. Learners also explore the tools and strategies that allow a database administrator to support data management. Topics include Oracle Database Architecture, Database Installation, Creating Database Using DBCA, Database Instances, ASM Instances, Network Environment, Storage Structures, User Security, Concurrency Control Mechanisms, Database Auditing and Maintenance, Performance Management, Backup and Recovery Concepts, Moving Data, Database Restart. Whole content will be explained in Oracle environment

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT815 DA	Database Administration	2	2	3

This course focuses on the roles and responsibilities of database administrators and explores how they contribute to data management. Learners determine how database design, administration, regulations, and standards impact effective data management processes. Learners also explore the tools and strategies that allow a database administrator to support data management. Topics include Oracle Database Architecture, Database Installation, Creating Database Using DBCA, Database Instances, ASM Instances, Network Environment, Storage Structures, User Security, Concurrency Control Mechanisms, Database Auditing and Maintenance, Performance Management, Backup and Recovery Concepts, Moving Data, Database Restart. Whole content will be explained in Oracle environment

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT815 CS	Security Methods and Practices	3	0	3

This course provides the foundation for understanding the key issues associated with protecting information assets, determining the levels of protection and response to security incidents, and designing a consistent, reasonable



information security system, with appropriate intrusion detection and reporting features. The purpose of the course is to provide the student with an overview of the field of information security and assurance. Students will be exposed to the spectrum of security activities, methods, methodologies, and procedures. Coverage will include inspection and protection of information assets, detection of and reaction to threats to information assets, and examination of pre- and post-incident procedures, technical and managerial responses, and an overview of the information security planning and staffing functions.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT816 AD	Agile Project Management	3	0	3

This course focuses on the core components of Agile project management, examining how it is distinct from traditional project management and equipping course participants with strategies and techniques for successful Agile project implementation. Students will practice the role of a project manager facilitating Agile practices towards achieving desired outcomes, as well as take a more in-depth look at the fundamental Agile concepts of adaptive planning, customer collaboration, and value-driven delivery in dynamic and often highly constrained environments

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT816 – DA	<i>Data Mining and Analysis in Information Technology</i>	2	2	3

This course explores how the advanced and complex data mining interdisciplinary field brings together techniques from databases, statistics, machine learning, and information retrieval. It covers the field of data mining and includes the topics data preprocessing, predictive modeling, model evaluation techniques, and clustering, classification, and association analysis and anomaly detection. The Laboratory session discusses Weka, data mining tool and using that perform pre- processing, classifications and clustering based on real word data sets.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT816 – CS	<i>Ethical Hacking</i>	2	2	3

This course will explore the various means that an intruder possesses to gain access to computer resources. We will investigate weaknesses by discussing the theoretical background behind, and whenever possible, actually performing the attack. We will then discuss methods to prevent/reduce the vulnerability

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT821	System Integration	3	0	3

This course focuses on the information systems in organizations, the process by which different computing systems and software applications are linked together physically or functionally. It examines the strategies and methods for blending a set of interdependent systems into a functioning or unified whole, thereby enabling two or more applications to interact and exchange data seamlessly. The course will explore tools and techniques for systems integration as well as proven management practices for integration projects.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT822	Embedded System	3	0	3

This course will cover the basics of embedded system organization, system on programmable-chip technologies and real-time systems. It provides the advance knowledge required for embedded computer design and development as well as real-time operating systems. Students are introduced to software development concepts applicable to real time and embedded systems

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT823	Mobile Programming	2	2	3

This course provides a systematic explanation of advanced concepts in mobile programming and provide an in-depth coverage of mobile systems and it application development. It includes the mobile user interface, application development standards and the mobile technology. Moreover, it covers various mobile computing applications using common paradigms in mobile application frameworks and development environments. The Lab component of the course includes developing apps based on UI widgets, custom views and layouts, notification, toast, menus, dialog, list and data storage using Java and XML in Android Studio.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT824 – AD	<i>C# Programming and Application Development</i>	2	2	3

This course is an introduction to computer programming for Windows. Emphasis will be on the fundamentals of structured design, development, testing, and implementation, and documentation, including language syntax, data and file structures, input/output devices, files, and databases. The following C# topics will be covered: C# syntax, basics of C# classes, interfaces, exception handling. The laboratory focuses on training the students with hands-on



coding exercises using commonly used data structures, writing custom functions, and reading and writing to files.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT824 – DA	<i>Web Mining and Information Retrieval</i>	2	2	3

The primary focus of this course is on Web mining and its applications to e-commerce and business intelligence. Specifically, we will consider techniques from machine learning, data mining, text mining, and databases to extract useful knowledge from Web data which could be used for site management, automatic personalization, recommendation, and user profiling. The first half of the course will be focused on a detailed overview of the data mining process and techniques, specifically those that are most relevant to Web mining. The second half will concentrate on the applications of these techniques to Web and e-commerce data, and their use in Web analytics, user profiling and personalization.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT824 – CS	<i>Wireless Networks</i>	2	2	3

This course introduces the students to the applied topic of Wireless Networks, focusing on applied methods, tools and technologies, as well as practical experience in designing and implementing wireless networks. Topics include hardware, software, data, applications, communication, design and installation of wireless networks, together with the implementation, performance, security and limitations of such systems.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT825 – AD	<i>Mobile Application Development</i>	2	2	3

The course focuses on developing mobile applications. It introduces the advance concepts of mobile programming under Android platform. Topics will include introduction to Android, MVC architecture for Android, Android Software Development Kit and Compatibility, creating user interface with layer and widgets, intents and activities, etc.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT825 – DA	<i>Big Data Analytics in Business Intelligence</i>	2	2	3

This course covers key aspects related to the use of business intelligence (BI) systems in organizations to support business strategy. Topics include data warehousing, predictive analytics, text/web analytics, data visualization, data-mining. A mix of theory and practice with real-world cases will be used to demonstrate key principles of BI and to help students develop analytical and problem-solving skills related to BI solutions

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT825 – CS	<i>System and Security Administration</i>	2	2	3

This course covers the installation and configuration of mainstream operating systems, important network services, disaster recovery procedures, and techniques for ensuring the security of the system. Students develop a complete understanding of enterprise networking and how different network technologies (such as Windows, Unix based) work together to form a network. It enables the students to design, build, implement, manage, configure and troubleshoot typical enterprise-wide computer networks.

The laboratory part makes use of Packet Tracer and GNS3 to allow students to implement static routing and analyze networks. These simulators will allow them to build simple networks, use appropriate devices and IP addresses, and perform basic configurations.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT826 – AD	<i>Computer Graphics and Applications</i>	2	2	3

This course covers the advanced technologies underlying the generation and display of images using computer graphics algorithms. Topics include: conversion of geometric primitives, 2D and 3D geometric transformations, clipping and windowing, hidden surface and hidden line elimination, line drawing, shading, half-toning, scene modeling and animation. The Laboratory focus on providing practical experience by using OpenGL to understand, realize and implement the concepts, theories and models learnt in the lectures. Moreover, it uses MAYA for practicing on animation

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT826 – DA	<i>Big Data Architecture and Design</i>	2	2	3

This course provides an overview of approaches facilitating data analytics on huge datasets. Different strategies are presented including sampling to make classical analytics tools amenable for big datasets, analytics tools that can be applied in the batch or the speed layer of a lambda architecture, stream analytics, and commercial attempts to make big data manageable in massively distributed or in-memory databases. Learners will be able to realistically assess the application of big data analytics technologies for different usage scenarios and start with their own experiments.



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT826 – CS	<i>Intrusion Detection and Prevention Systems</i>	2	2	3
This course will deal with methods that ID systems use to detect attacks against Information Networks. These methods will include auditing systems, monitoring techniques, and various Intrusion Detection Processes and technologies that can be used for discovery of Hackers and Attacks that could threaten the Confidentiality, Integrity, or Availability of an Information System. The two basic types of Intrusion Detection: Anomaly and Misuse detection will be discussed.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT832	Practicum in IT	0	12	6
This course provides the students with an opportunity to be immersed in the actual work environment along their specialization. The students are required to complete 240 hours on-site training to get hands on experience of working in the industry.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT833	Software Project A	3	0	3
This course provides guideline that will enable the students to effectively prepare a research project in relation to their field of specialization. It deals with the development of the essential ideas, concepts, principles, tools, and skills needed for developing a research project. It includes Research issues, System Analysis, System Design, Project tracking and control of a research project. It makes the research proposal, problem statement, literature survey, research methodology of a research project.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT834 – A	Parallel and Distributed Computing	2	2	3
This course provides an overview of distributed and parallel systems, with special emphasis on cloud-based implementations. Topics include distributed systems and models, computer clusters for scalable parallel computing, virtual machines, cloud platform architecture, service-oriented architectures, grid computing, and peer-to-peer computing. The Laboratory exercises will be used to demonstrate various aspects of parallel and distributed computing in NetBeans with various simulation tools like Vmware, Hadoop, CloudSIM and IBM's Bluemix.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT834 – B	Enterprise Resource Planning	2	2	3
This course serves as an introduction to Enterprise Resource Planning and also provides a solid foundation for many disciplines in common business modern information systems. Students examine how and why an ERP system is implemented and how it is integrated with existing business processes. Students examine the impact of ERP on the organization and how change can be managed. The laboratory focuses on training the students with hands-on experience using SAP				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT834 - C	Compiler Construction	2	2	3
This course covers the issues that arise in the design and construction of translators for programming languages. The topics covered include structure of one-pass and multiple-pass compilers; symbol table management; lexical analysis; traditional and automated parsing techniques, including recursive descent and LR parsing; syntax-directed translation and semantic analysis; run-time storage management; intermediate code generation; introduction to optimization; and code generation. In the laboratory part some of the theories, methods and principles treated in the theory part are illustrated and practically applied and the laboratory focuses on training the students with hands-on experience on GCC/ANTLR.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT835 – AD	<i>Cloud Computing</i>	3	0	3
This course covers concepts required to build a cloud infrastructure based on a cloud computing reference model. The reference model includes five fundamental layers, namely, physical, virtual, control, and service and three cross-layer functions, namely business continuity, security, and service management for building a Cloud infrastructure. Furthermore, additional topics included Cloud infrastructure reference model, resource management, programming models, application models, system characterizations, and implementations, deployment of Cloud computing systems. Moreover, this course takes an open approach to describe concepts and technologies.				



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT835 – DA	<i>Cloud -based Data Distribution and Virtualization</i>	3	0	3
<p>This course covers concepts required to build a cloud infrastructure based on a cloud computing reference model. The reference model includes five fundamental layers, namely, physical, virtual, control, and service and three cross-layer functions, namely business continuity, security, and service management for building a Cloud infrastructure. Furthermore, additional topics included Cloud infrastructure reference model, resource management, programming models, application models, system characterizations, and implementations, deployment of Cloud computing systems. Moreover, this course takes an open approach to describe concepts and technologies.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT835 – CS	<i>Cloud Computing</i>	3	0	3
<p>This course covers concepts required to build a cloud infrastructure based on a cloud computing reference model. The reference model includes five fundamental layers, namely, physical, virtual, control, and service and three cross-layer functions, namely business continuity, security, and service management for building a Cloud infrastructure. Furthermore, additional topics included cloud infrastructure reference model, resource management, programming models, application models, system characterizations, and implementations, deployment of Cloud computing systems. Moreover this course takes an open approach to describe concepts and technologies.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT836 – AD	<i>Server Side Programming</i>	2	2	3
<p>This course provides the knowledge necessary to design and develop dynamic, database-driven Web pages. This course introduces the PHP framework and syntax and covers in depth the most important techniques used to build dynamic Web sites. Students learn how to connect to any modern database and perform hands on practice with a MySQL database to create database-driven HTML forms and reports.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT836 – DA	<i>Principles of Data Science and Visualization</i>	2	2	3
<p>This course discusses the core programming concepts of MATLAB which is used for data visualization. It focuses on exploratory and statistical data analysis, data and information visualization, and the presentation and communication of analysis results. The laboratory focuses on training the students with hands-on coding experience for data visualization using MATLAB Software</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT836 – CS	Applied Cyber Security	3	0	3
<p>Cyber security is a very large subject, and therefore this course is only intended to cover the current leading and pressing cyber security topics. Cyber security topics include cryptography, computer forensics, malware, networking, software development, as well as investigating the increasingly important legal and ethical issues in cyber security. This is an applied course, which mixes theoretical skills with practical work in the lab to give hands-on experience.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT841	Internet of Things	3	0	3
<p>This course discusses the current and leading IoT technologies for building IoT solutions for Smart Homes, Smart Campus etc., using IoT sensor, actuators and devices. It covers key concepts of IoT (Internet of Things) and challenges related to digital transformation, security and privacy. The course examines the evolution of the Internet and how the interconnection of people, processes, data, and things are transforming every industry.</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT842	Research Project B	0	6	3
<p>This course provides opportunity to students to integrate their knowledge by implementing a significant software system as part of a systems development project including proper documentation in a real-world environment</p>				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT843 – A	Artificial Intelligence and Machine Learning	2	2	3
<p>This course covers advanced theories and state-of-the-art techniques of artificial intelligence. Artificial intelligence (AI) is a research field that studies how to realize the intelligent human behaviors on computers. The AI is to make a computer that can learn, plan, and solve problems autonomously. The topics includes: AI methodology and fundamentals; intelligent agents; search algorithms; game playing; supervised and unsupervised learning; decision tree learning; uncertainty and probabilistic reasoning in AI; Bayesian networks; statistical learning; fuzzy logic and natural language processing.</p>				



Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT843 - B	Expert Systems	2	2	3
Techniques for the construction of expert systems including computer inference and knowledge acquisition; knowledge representation schemes; conceptual data analysis; plausible reasoning techniques; validation and measurement methods; production-rule programming				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT843 - C	Principles of Data Science	2	2	3
This course utilizes several open-source tools to address big data challenges, taking an "Open" or technology-neutral approach. It covers concepts, and techniques needed to deal with various aspects of data science practice, including data collection, cleansing, mangling, and integration, exploratory data analysis, predictive modeling, descriptive modeling, data product creation, machine learning algorithms, evaluation, effective communication and data visualization.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT844 – AD	Software Quality Assurance	3	0	3
This course discusses advanced concepts of software quality and techniques in software quality assurance, particularly software testing and validation. It presents the in-depth interplay between testing, quality assurance and quality engineering to ensure the quality of the software. This course covers software quality and assurance framework, testing concepts and issues, verification and validation, inspection, software reliability, quality models and measurement and formal methods.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT844 – DA	Computational Thinking with Python	2	2	3
This course discusses the core programming concepts like data structures, conditionals, loops, variables, functions, object-oriented programming and graphical user interface-driven applications. It also includes an overview of the various tools available for writing and running Python, and gets students coding quickly. The laboratory focuses on training the students with hands-on coding exercises using commonly used data structures, writing custom functions, and reading and writing to files.				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT844 – CS	Advanced Cryptographic Algorithms	2	2	3
This course investigates advanced topics in cryptography. It begins with an overview of necessary background in algebra and number theory, private- and public-key cryptosystems, and basic signature schemes. The course will cover number theory and basic theory of Galois fields used in cryptography; history of primality algorithms and the polynomial-time test of primality; discrete logarithm-based cryptosystems including those based on elliptic curves; interactive protocols including the role of zero-knowledge proofs in authentication; construction of untraceable electronic cash on the net; and quantum cryptography, and one or more of digital watermarking, fingerprinting, and steganography. Programming will be required				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT845 – AD	<i>.Net Technologies</i>	2	2	3
This course discusses advanced skills needed for software development using Visual Programming tools. It also includes an overview of the basic structure of a VB.NET application. It also introduces the programming skills required using VB.NET and to integration of web pages using ADO.NET The laboratory focuses on training the students with hands-on experience on Visual Studio. The students will gain skills on Visual programming and ASP.NET using the Integrated Development Environment (IDE) Visual Studio				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT845 – DA	<i>Data Interpretation and Statistical Analysis in Information Technology</i>	3	0	3
This course is designed to introduce basic principles of statistical methods and procedures used for data analysis. It also covers the crucial topics in statistics including - data gathering, summarizing data using descriptive statistics, displaying and visualizing data, examining relationships between variables, probability distributions, expected values, hypothesis testing, introduction to ANOVA (analysis of variance), regression and correlation analysis				
Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT845 – CS	<i>TCP/IP and Routing</i>	2	2	3
This course presents basic networking technology and terminology, including the ISO/OSI Network Reference Model, DoD networking model, IP addressing and name resolution, and other concepts and information relevant to setting up and using TCP/IP-based networks. The course demonstrates the use of Ethereal, an open source protocol analyzer, to help readers understand how those protocols and services work, while also exploring the operation and				



message sequences for all key data-link, network, and transport layer protocols. In addition, students learn how to use a protocol analyzer and common IP software tools to document and troubleshoot a TCP/IP network, including basic addressing and setup, connectivity and communications, name resolution, and fundamental network services. Coverage of network security includes explanations of key exploits and vulnerabilities and how potential problems may be remedied or worked around. The course surveys real-time IP-based protocols and services including Voice over IP (VoIP) and Instant Messaging (IM) applications, with an overview of the protocols, services, and common message sequences involved.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT846 – AD	<i>Software Testing Tools</i>	2	2	3

This course covers the aspects of software development besides programming, such as diagnosing bugs, testing, and debugging, comprise over 50% of the cost of software development. Furthermore topics covered include software maintenance tasks such as debugging, maintaining and testing. Many diverse techniques exist with their own strengths and limitations. Those Techniques as well as imparts hands-on experience with applying them to automate testing, debugging, and finding bugs in complex real-world programs.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT846 – DA	<i>Database-Driven Web Applications</i>	2	2	3

This course focuses in the development of Web-based database applications, with an emphasis on sound database design. This course provides the concepts and skills necessary to design and develop web-based database applications. Students build a working database application using PHP and MySQL. Through hands-on projects, students will build, populate, query, and write transactions for a relational database using SQL and then develop a client application to access their database.

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSIT846 – CS	<i>Mobile Internet Technology</i>	2	2	3

This course examines the characteristics of mobile and wireless networks and the impact of these technologies on the development of software and supporting protocols. Topics covered include: mobile and wireless application design and development environments, middleware support, protocol requirements for ad-hoc and sensor networks, wireless & mobile security vulnerabilities and standards, supporting reliable communication in lossy and intermittently connected networks; challenges and architectures for wireless mobility - 4G networks, Wi-Fi, Wi-Max, Bluetooth, Mobile IP, convergence of voice and data networks.



<b>1. Teaching Institution</b>	University of Technology Bahrain
<b>2. University Department</b>	College of Engineering
<b>3. Programme Title</b>	Bachelor of Science in Informatics Engineering (BSIE)
<b>4. Title of Final Award</b>	Bachelor of Science in Informatics Engineering (BSIE)
<b>5. Mode of Attendance</b>	Actual classroom learning interactive
<b>6. National Qualification Framework Level and Credit</b>	NQF Level 8 612 NQF Credits (204 ACS Credits)
<b>7. Accreditation</b>	ABET Engineering Accreditation Commission (EAC)
<b>8. Other external influences</b>	<p><b>Local External Influences/References</b> Ministry of Education (MOE), Higher Education Council (HEC) Education and Training Quality Authority (BQA)</p> <p><b>International External Influences/References</b> Accreditation Board for Engineering and Technology (ABET) Association in Computing Machinery (ACM) in Computing Bologna Framework</p>
<b>9. Date of production/revision of this specification</b>	September 2020

**10. Aims of the Programme**

The Bachelor of Science in Informatics Engineering (BSIE) is an engineering programme which combines computer technology with engineering concepts. It is an interdisciplinary scientific area focusing on the application of advanced computing, information and communication technologies to engineering. It covers the design and development of intelligent engineered products and processes enabled by the integration of computer, control systems and software engineering technologies.

Graduates of the programme, three (3) to five (5) years after graduation shall be able to:

1. Pursue careers in Mechatronics Engineering or related fields towards the improvement of engineering practice.
2. Engage in lifelong learning toward completion of advanced/continuing education or other learning opportunities.
3. Demonstrate professional success through strengthened networks and/or positions of increasing social responsibility.

## 11. Learning Outcomes, Teaching, Learning and Assessment Methods

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.
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 objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

### Teaching and Learning Methods

1. Constructive Method. Learners must be fully engaged and active in the process of constructing meaning and knowledge based on their prior knowledge and experiences through the process of doing, making, writing, designing, creating, and solving. It allows teachers to implement differentiated learning, authentic assessment practices and incorporate technologies to improve individual learning experiences. It includes simulations, in-course projects, field trips, digital content, group discussions and reflections. This method strives to improve achievement by consciously developing learners' ability to consider ideas, analyze perspectives, solve problems, and make decisions on their own thereby making them more responsible and independent.
2. Inquiry based Method. Learners develop cognitive skills like critical thinking and problem solving by working on questions, problems, or scenarios and formulate creative solutions. The teachers use structured, guided, or open inquiry to facilitate learning. As a process, learners are involved in their learning by formulating questions, investigating, building their understanding, and creating meaning and new knowledge on a certain lesson. Typically, activities include laboratory sessions and research-based activities.
3. Collaborative Method. Learners are divided into small groups to learn something together and capitalize on one's other resources and skills, evaluating one another ideas, and monitoring one another's work. It allows students to actively interact by sharing experiences and take on different roles. Typically, students are provided with problems or projects that they work on together to search for understanding, meaning, or solutions and each group is expected to work together developing or formulating solutions and present the solution in class. The activities include think-pair-share, jigsaw, or round-robin which effectively engages students to complete the tasks.
4. Experiential learning method is the process of learning by doing. By engaging students to hands on experience which attempts to apply theories and knowledge learned in the classroom to real-world situations. This may include team challenges, simulations, company visits/fieldworks and other extracurricular activities. Experiential learning opportunities exist in a variety of course- and non-course-based forms and may include community service, service-learning, undergraduate research, study abroad, and culminating experiences such as internships, student teaching, and capstone projects.

### Assessment Methods

- Assessment is through a combination of written examinations (essays, class tests, homework) and assessed coursework (final in-course project, problem sets, laboratory exercises and machine problems).



## 12. Programme Structure

### BACHELOR OF SCIENCE IN INFORMATICS ENGINEERING (BSIE) CURRICULUM PLAN EFFECTIVE SY2017-2018

#### REMEDIAL CLASSES

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
MATH300	Remedial Mathematics	3	0	0	
ENGL301	Speaking and Listening	9	0	0	
ENGL302	Grammar and Vocabulary	9	0	0	

#### FIRST YEAR

##### FIRST TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
CHEM400	General Chemistry 1	2	2	3	
CENG411	Introduction to Computing	2	2	3	
SOCI400	Sociology	3	0	3	
ENGL401	English Communication Skills 1	3	0	3	
MATH401	College Algebra	3	0	3	
MATH402	Plane and Spherical Trigonometry	3	0	3	
EUTH400	Euthenics 1	1	0	0	
<b>TOTAL</b>				18	

##### SECOND TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
ARAB400A	Arabic Language	3	0	3	
CHEM401	General Chemistry 2	2	2	3	CHEM400
HUMR400	Human Rights	3	0	3	SOCI400
ENGL402	English Communication Skills 2	3	0	3	ENGL401
MATH406	Differential Calculus with Analytic Geometry	5	0	5	MATH401, MATH402
EUTH401	Euthenics 2	1	0	0	EUTH400
<b>TOTAL</b>				17	

##### THIRD TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
SCIE400	Biology	2	2	3	
ENGL403	Speech and Oral Communication	2	2	3	ENGL402
HIST400	History of Bahrain and GCC Region	3	0	3	
MATH501	Integral Calculus with Differential Equations	5	0	5	MATH406
PHYS501	University Physics 1	2	2	3	MATH406
<b>TOTAL</b>				17	



**SECOND YEAR  
FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
CENG511	Computer Programming	2	2	3	CENG411
ENGL502	Technical Writing	3	0	3	ENGL402
ENVS400	Environmental Science	3	0	3	SCIE400
MATH503	Discrete Mathematics	3	0	3	MATH401
ENGG410A	Engineering Drawing	2	2	3	
PHYS502	University Physics 2	2	2	3	PHYS501, MATH501
<b>TOTAL</b>				18	

**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	CREDIT	PREREQUISITE/S
CENG522	Data Structures and Algorithm	2	2	3	CENG511
ENGG531	Electric Circuit Theory 1	2	2	3	PHYS502, MATH501
MATH502	Advanced Mathematics	2	2	3	MATH501
MATH409	Probability and Statistics	3	0	3	MATH503
CENG523	Advanced Programming	2	2	3	CENG511
PHYS503	University Physics 3	2	2	3	PHYS502
<b>TOTAL</b>				18	

**THIRD TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
ENGG534	Electronics 1	2	2	3	ENGG531
CENG534	Principles of Communications	2	2	3	CENG522
ENGG611	Electric Circuit Theory 2	2	2	3	ENGG531
ENGG522	Engineering Economy	3	0	3	MATH406
MATH504	Multivariate Calculus	2	2	3	MATH501
MATH505	Numerical Methods and Analysis	2	2	3	MATH502
<b>TOTAL</b>				18	

**THIRD YEAR  
FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
ENGG625	Logic Circuit & Switching Theory	2	2	3	ENGG534
CENG611	Data Communication and Networking 1	2	2	3	CENG534
ENGG613	Electronics 2	2	2	3	ENGG534
ENGG640	Signals and Systems	2	2	3	ENGG611, MATH504
ENGG612	Electromagnetics	3	0	3	ENGG611
MATH506	Linear Algebra	2	2	3	MATH504
<b>TOTAL</b>				18	



**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
CENG622	Data Communication and Networking 2	2	2	3	CENG611
CENG623	Advanced Logic Circuits and Design	2	2	3	ENGG625
MATH508	Partial Differential Equations	3	0	3	MATH505
ENGG614	Control Systems	2	2	3	ENGG640
CENG624	Computer Organization and Architecture	3	0	3	ENGG625
CENG625	Power Electronics	2	2	3	ENGG613
<b>TOTAL</b>				18	

**THIRD TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
CENG636	Data Communication and Networking 3	2	2	3	CENG622
ENGG638	Engineering and Project Management	3	0	3	ENGG522
CENG637	Operating System	2	2	3	CENG624
CENG638	Digital Control Systems	2	2	3	CENG624
CENG639	Microprocessor Systems	2	2	3	CENG625
MATH507	Optimization Methods	3	0	3	MATH505
<b>TOTAL</b>				18	

**FOURTH YEAR****FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
CENG641	Digital System Design	2	2	3	CENG639
CENG642	System Analysis and Design	2	2	3	CENG636
CENG643	Technopreneurship	3	0	3	ENGG638
CENG644	Data Communication and Networking 4	2	2	3	CENG636
CENG645	Real Time Embedded Systems	2	2	3	CENG638
ENGG501	Safety Engineering	2	0	2	ENGG611
<b>TOTAL</b>				17	

**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
ENGG639	Professional Ethics and Engineering Laws	3	0	3	ENGG501
CENG656	Network Security	2	2	3	CENG641
CENG657	Industrial Attachment	0	6	6	CENG645
CENG658	Software Engineering	2	2	3	CENG641
CENG659	Computer Engineering Design Project A	0	6	3	CENG645
<b>TOTAL</b>				18	



### THIRD TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
CENG661	Major Elective 1	2	2	3	SEE LIST BELOW
CENG662	Computer Engineering Design Project B	0	6	3	CENG659
CENG663	Major Elective 2	2	2	3	SEE LIST
<b>TOTAL</b>				9	
<b>Grand Total</b>				<b>204</b>	

### ELECTIVE COURSES

#### MAJOR ELECTIVE 1

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
CENG661A	Wireless Communication System	2	2	3	CENG644
CENG661B	Digital Signal Processing	2	2	3	ENGG640
CENG661C	Digital Communication	2	2	3	ENGG640

#### MAJOR ELECTIVE 2

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITES
CENG663A	Special Topics in Computer Engineering	2	2	3	CENG645
CENG663B	Robot Kinematics, Dynamics and Control	2	2	3	CENG641
CENG663C	Machine Vision	2	2	3	CENG645

### 13. Awards and Credits

Degree/ Certificate Awarded	Bachelor's Degree
Total Units for Degree	204
Total Trimesters Completed	12

### 18. BSIE CURRICULUM SKILLS MAPPING

Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Programme Learning Outcomes / Student Outcomes						
				SO1	SO2	SO3	SO4	SO5	SO6	SO7
Year 1 1st Tri	CHEM400	General Chemistry 1	(C)	✓				✓	✓	✓
	CENG411	Introduction to Computing	(C)	✓					✓	
	SOCI400	Sociology	(C)				✓			
	ENGL401	English Communication Skills 1	(C)			✓				
	MATH401	College Algebra	(C)	✓						
	MATH402	Plane and Spherical Trigonometry	(C)	✓						
	EUTH400	Euthenics 1	(C)							
Year 1 2nd Tri	ARAB400A	Arabic Language	(C)				✓			
	CHEM401	General Chemistry 2	(C)	✓				✓	✓	✓
	HUMR400	Human Rights	(C)				✓			
	ENGL402	English Communication Skills 2	(C)			✓				
	MATH406	Differential Calculus with Analytic Geometry	(C)	✓						



18. BSIE CURRICULUM SKILLS MAPPING										
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Programme Learning Outcomes / Student Outcomes						
				SO1	SO2	SO3	SO4	SO5	SO6	SO7
	EUTH401	Euthenics 2	(C)							
Year 1 3rd Tri	SCIE400	Biology	(C)	✓				✓	✓	✓
	ENGL403	Speech and Oral Communication	(C)			✓				
	HIST400	History of Bahrain and GCC Region	(C)				✓			
	MATH501	Integral Calculus with Differential Equations	(C)	✓						
	PHYS501	University Physics 1	(C)	✓				✓	✓	
Year 2 1st Tri	CENG511	Computer Programming	(C)	✓					✓	
	ENGL502	Technical Writing	(C)			✓				
	ENVS400	Environmental Science	(C)		✓		✓			✓
	MATH503	Discrete Mathematics	(C)	✓						
	ENGG410A	Engineering Drawing	(C)	✓					✓	
	PHYS502	University Physics 2	(C)	✓				✓	✓	
Year 2 2nd Tri	CENG522	Data Structures & Algorithm	(C)	✓					✓	
	ENGG531	Electric Circuit Theory 1	(C)	✓	✓	✓		✓	✓	
	MATH502	Advanced Mathematics	(C)	✓					✓	✓
	MATH409	Probability and Statistics	(C)	✓						
	CENG523	Advanced Programming	(C)	✓	✓		✓		✓	✓
	PHYS503	University Physics 3	(C)	✓				✓	✓	✓
Year 2 3rd Tri	ENGG534	Electronics 1	(C)	✓	✓	✓		✓	✓	
	CENG534	Principles of Communications	(C)	✓						
	ENGG611	Electric Circuit Theory 2	(C)	✓	✓	✓		✓	✓	✓
	ENGG522	Engineering Economy	(C)	✓			✓			
	MATH504	Multivariate Calculus	(C)	✓					✓	✓
	MATH505	Numerical Methods and Analysis	(C)	✓					✓	✓
Year 3 1st Tri	ENGG625	Logic Circuit & Switching Theory	(C)	✓	✓		✓	✓	✓	✓
	CENG611	Data Communication and Networking 1	(C)	✓				✓	✓	✓
	ENGG613	Electronics 2	(C)	✓	✓	✓		✓	✓	✓
	ENGG640	Signals and Systems	(C)	✓				✓	✓	
	ENGG612	Electromagnetics	(C)	✓						✓
	MATH506	Linear Algebra	(C)	✓					✓	✓
Year 3 2nd Tri	CENG622	Data Communication and Networking 2	(C)	✓	✓			✓	✓	✓
	CENG623	Advanced Logic Circuits and Design	(C)	✓	✓			✓	✓	✓
	MATH508	Partial Differential Equations	(C)	✓						
	ENGG614	Control Systems	(C)	✓	✓				✓	✓
	ENG624	Computer Organization and Architecture	(C)	✓	✓	✓	✓	✓	✓	✓
	ENG625	Power Electronics	(C)	✓	✓		✓		✓	
Year 3 3rd Tri	CENG636	Data Communication and Networking 3	(C)	✓	✓			✓	✓	✓
	ENGG638	Engineering Project Management	(C)	✓		✓	✓	✓		
	CENG637	Operating Systems	(C)	✓				✓	✓	✓
	CENG638	Digital Control Systems	(C)	✓	✓	✓			✓	✓



18. BSIE CURRICULUM SKILLS MAPPING										
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Programme Learning Outcomes / Student Outcomes						
				SO1	SO2	SO3	SO4	SO5	SO6	SO7
	CENG639	Microprocessor Systems	(C)		✓			✓	✓	✓
	MATH507	Optimization Methods		✓						
Year 4 1st Tri	CENG641	Digital System Design	(C)	✓	✓	✓			✓	✓
	CENG642	System Analysis and Design	(C)	✓	✓			✓	✓	✓
	CENG643	Technopreneurship	(C)			✓	✓	✓	✓	✓
	CENG644	Data Communication and Networking 4	(C)	✓	✓		✓	✓	✓	✓
	CENG645	Real Time Embedded Systems	(C)	✓	✓	✓		✓	✓	✓
	ENGG501	Safety Engineering	(C)				✓			
Year 4 2nd Tri	ENGG639	Professional Ethics and Engineering Laws	(C)				✓			
	CENG656	Network Security	(C)	✓	✓		✓	✓	✓	✓
	CENG657	Industrial Attachment	(C)	✓	✓	✓	✓	✓	✓	✓
	CENG658	Software Engineering	(C)	✓	✓		✓	✓	✓	✓
	CENG659	Computer Engineering Design Project A	(C)	✓	✓	✓	✓	✓	✓	✓
Year 4 3rd Tri	CENG661	Major Elective 1	(O)	✓	✓	✓		✓	✓	✓
	CENG662	Computer Engineering Design Project B	(C)	✓	✓	✓	✓	✓	✓	✓
	CENG663	Major Elective 2	(O)	✓	✓	✓	✓		✓	✓

## COURSES DESCRIPTION

### Remedial Classes

COURSE CODE	COURSE TITLE	LEC Hrs	LAB Hrs	CREDIT UNITS	PRE-REQUISITES
MATH300	Remedial Mathematics	3	0	0	
<p>This course is a comprehensive study of mathematical skills in arithmetic which should provide a strong mathematical foundation to pursue formal courses in college mathematics. Topics include principles and applications of whole numbers, fractions, decimals, percent, rates, ratio and proportion, measurements and prerequisite concepts for algebra, geometry, and statistics.</p>					
ENGL301	Speaking and Listening	9	0	0	
<p>ENGL301 is a required remedial course for entering students whose English language skills need further improvement and enhancement to be able to cope with the university's academic courses. It utilizes an integrated approach in developing the students' English macro skills with emphasis on speaking and listening. Further, this course introduces the students to English language arts where they get involved and engaged in three phases (beginner, intermediate and advanced). It intensifies its course intended learning objectives with the utilization of audio-lingual presentations where the students are expected to gain more knowledge to communicate effectively in English.</p>					
ENGL302	Grammar and Vocabulary	9	0	0	
<p>ENGL302 is a required remedial course for entering students whose English language skills need further improvement and enhancement to be able to cope with the university's academic courses. It utilizes an integrated approach in developing the students' skills in grammar and vocabulary in three phases (beginner, intermediate and advanced). In addition, it includes information related to dictionary use, basic grammar rules and daily use vocabulary words through a variety of contexts, written responses, idioms, writing structures, settings of writing and the process of forming written communication where the students are expected to gain more knowledge to communicate effectively in English.</p>					



**FIRST YEAR  
FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	CREDIT UNITS	PRE-REQUISITES
CHEM400	General Chemistry 1	2	2	3	
This course demonstrates atomic theories, relationships between structure and properties of matter, scientific notation, density calculation, Atomic structure and energy levels, periodic table, ions formation and chemical bonding, chemical reactions and emphasizing the chemical change, balancing equation, Discussion on gas law includes properties and application of gas laws, Acids and bases, solution and clarification of acid – base concept.					
CENG411	Introduction to Computing	2	2	3	
This course covers the detailed knowledge and understanding of computer hardware and software. It includes the discussion of number system, networking and internet and the interdisciplinary science of computing. It also provides a discussion of programme development structures and algorithm and flowchart development. The laboratory focuses on configuring web browsers security, configuring E-mail security, configuring OS security and working with Microsoft Excel and Visio.					
SOCI400	Sociology	3	0	3	
This course is designed to expose students in a detailed approach of studying society. It intends to give emphasis on the sociological perspectives, relationships with other social sciences, the main figures in sociological development, including introduction to culture, transformation of societies, importance of socialization, social groups, deviance and social control. Further, it integrates the discussions on social institutions that enable the college students to understand the economic perspective from ancient to present, the evolution of education and the current viewpoint of family.					
ENGL401	English Communication Skills 1	3	0	3	
This is an introductory course in English communication designed to provide comprehensive, up-to-date and relevant instruction in the correct use of grammar. It intends to build up students' confidence in communicating their thoughts, ideas, information and messages through the functions and structures of different words, phrases, clauses, sentences and paragraphs. In addition, the integration of language skills increases their communicative competence and prepares them for the academic and social challenges in college and beyond.					
MATH401	College Algebra	3	0	3	
This course is designed to familiarize learners with main theories, principles and concepts of college algebra that are useful in analysis and simplification of basic and some advanced mathematical problems. Content includes functions which are polynomial, rational, exponential, logarithmic and related equations. Sketching graphs, Matrices, determinants, progressions and inequalities as applied to engineering.					
MATH402	Plane and Spherical Trigonometry	3	0	3	
This course is designed to familiarize learners with main theories, principles and concepts of plane and spherical trigonometry that are useful in analysis and simplification of some advanced mathematical problems. The course covers topics on angles and their measurement, trigonometric/circular functions, inverse trigonometric functions, identities, graphs of trigonometric functions, solutions of trigonometric equations, solutions of right and oblique plane triangles, introduction to spherical trigonometry and its applications.					
EUTH400	Euthenics 1	1	0	0	
This course focuses on the discussion of the policies and procedures that are intended to guide each member of UTB community in the performance of his/her role. This is used as a resourceful tool that orients the students with academic and non-academic policies of UTB. It contains the history, vision / mission and objectives of the institution, the services and academic support available.					

**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC Hrs	LAB Hrs	CREDIT Units	PRE-REQUISITES
ARAB400A	Arabic Language	3	0	3	
يركز مقرر اللغة العربية على دراسة أساسيات اللغة العربية كقراءة وتحليل و نقد وبيان خصائص النصوص المطلوبة التي تتناول مختلف الأجناس الأدبية نثرا وشعرا. كما يركز هذا المقرر على دراسة وفهم وتطبيق القواعد النحوية والأساليب الصرفية الأساسية في اللغة العربية مع مراعاة مهارات الكتابة الإملائية الصحيحة.					
CHEM401	General Chemistry 2	2	2	3	CHEM400
This is lecture-laboratory course which includes topic on unsaturated hydrocarbons which illustrates the structure					



and reactions of alkanes, alkenes, alkynes, alkyl halides, alcohol, ethers, carboxylic acid, esters, aldehydes, ketones, amines and its role and behavior in the living system. It also introduces the students to the chemistry of heterocycles, carbohydrates, oil and fatty acids and amino acids, nomenclature of organic compounds, synthesis and reaction techniques.					
HUMR400	Human Rights	3	0	3	SOCI400
<p>تناول هذا المقرر تمكين الطالب وجعله قادرا على معرفة الخلفية التاريخية لحقوق الإنسان، المفاهيم والاصول الفلسفية والرؤيا الاسلامية لحقوق الانسان كما يتناول بالعرض والتحليل مصادر حقوق الإنسان كالإعلان العالمي لحقوق الإنسان، والعهد الدولي الخاص بالحقوق المدنية والسياسية والعهد الدولي الخاص بالحقوق الاقتصادية والاجتماعية والثقافية والوثائق الدولية الأخرى ذات الصلة بحقوق الإنسان ماورد فيها من الحقوق و كما يتناول بالمقارنة ذاتها ما ورد في الوثائق الوطنية مثل دستور مملكة البحرين والميثاق الوطني وكيفية تطبيقها. ويمكن الطلبة من التمييز بينها مهارات تحليل وتفسير ونقد التطبيقات والتجاوزات فضلا عن القدرة على التحليل والتواصل وعرض مسائل حقوق الإنسان بمختلف الوسائل.</p> <p>This course makes the students able to know the background, main concepts of Human Rights and the philosophical thoughts and Islamic view which contribute in modern Human Rights. It makes them able to analyze what is mentioned in different kinds of Human Rights sources as Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and International Covenant on Economic, Social and Cultural Rights. It deals in the same approach with the National Sources of Human Rights such as the Constitutional Law of Kingdom of Bahrain and National Action Charter with applications as well. The course makes the students able to analyze, discuss and debate Human Rights issues in different ways.</p>					
ENGL402	English Communication Skills 2	3	0	3	ENGL401
<p>This is an intermediate course in English communication geared towards equipping the college students with writing skills in preparation for academic writing. It progresses from familiarizing the sentence conventions to balancing the structures of the sentence for variation and rhythm. Further, it enables students to follow the principles that govern the composition writing in achieving unity, coherence and emphasis; to improve their expository, descriptive, narrative and argumentative works and to get hold of the discipline in academic writing for future advantages by providing them the opportunity in adhering the process of writing for effective communication.</p>					
MATH406	Differential Calculus with Analytic Geometry	5	0	5	MATH401, MATH402
<p>This course is intended to develop practical skills in differential calculus and analytic geometry. Emphasis is placed on functions, limits and continuity, fundamental concepts of analytic geometry, explicit and implicit differentiation of algebraic and transcendental functions, conics, higher derivatives, polar coordinates and its applications (equations of tangent and normal lines, sketching polynomial curves, maxima and minima problems and time rates.</p>					
EUTH401	Euthenics 2	1	0	0	EUTH400
<p>The course introduces the students to the guidelines on disciplinary actions as regards to violations of the rules and regulations of the University. The students will be taught on the general concepts and principles on values formation, attitudes and personality development. This course will encourage the students to participate in classroom discussion for them to better understand and appreciate acceptable social norms and conduct of an educated individual.</p>					

### THIRD TRIMESTER

COURSE CODE	COURSE TITLE	LEC Hrs	LAB Hrs	CREDIT Units	PRE-REQUISITES
SCIE400	Biology	2	2	3	
<p>This course focuses on the detailed knowledge and understanding of the fundamental life processes and functions of living systems including the nature of knowledge relating to cell structure, function and metabolism, bioenergetics, genetics and biotechnology, cellular reproduction and cell division, evolution, biodiversity, and ecology. The students will demonstrate the importance between explanations based on evidence through inquiry-based laboratory activities to provide insight into scientific method.</p>					
ENGL403	Speech and Oral Communication	2	2	3	ENGL402
<p>This is a developmental course in English communication geared towards competent, efficient, and effective interpersonal speaking across communicative contexts. It refines the oral communication skills of the college students through accurate articulation of segmental phonemes, pronunciation drills and enunciation of the supra segmental features of speech, specifically sentential stress and intonation. Further, it incorporates the mechanics and techniques of speech craft and delivery with emphases on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.</p>					



HIST400	History of Bahrain and GCC Region	3	0	3	
<p>يتناول مقرر <b>HIST400</b> دراسة تاريخ مملكة البحرين ومنطقة الخليج العربي ويُظهر تعداد للاحداث الهامة في البحرين ومنطقة الخليج العربي وأثارها على الوضع الراهن ، و يغطي الأهمية الاستراتيجية والمكانية للبحرين للبحرين بدءاً من الحضارات القديمة و مروراً إلى العهد الاسلامي، والاحتلال البرتغالي، وصراع القوى في القرن السابع عشر، وصعود قبيلة العتوب، والبحرين تحت الحماية البريطانية وابرام المعاهدات مع بريطانيا، وانسحاب القوات البريطانية من البحرين والخليج، ويتناول وصف الاماكن والشخصيات والتطورات التاريخية والانجازات في البحرين في عهد حكام البحرين، والبعد العربي والاسلامي في تكوين هوية البحرين ، الانضمام لمجلس التعاون الخليجي ، وتاريخ دول الخليج العربي (دول مجلس التعاون الخليجي)، ومع نهاية الكورس يكون الطالب قادر على تحليل الجذور التاريخية للبحرين لتكوين الهوية الوطنية ، والتمتع بمقدرة الاتصال الشفهي والكتابي والعمل بشكل منتج وفعال ضمن فريق واحد.</p> <p>This course includes the history of the Kingdom of Bahrain and the Arabian Gulf region. It includes the important events in Bahrain and the Arabian Gulf region and their impact on the current situation. It covers the strategic importance of Bahrain, starting with "Ancient civilizations and passing through" the Islamic era, Bahrain's entry into Islam, Portuguese occupation, competition of powers in the 17<sup>th</sup> century and the rise of a tribe of Al-Atub. It includes the history of Bahrain under the British protection and the conventions between Bahrain and Great Britain up to British troops leaving the region. It describes the places and persons as well as the historical developments and achievement in Bahrain during the time of Al- Khalifah. It includes independence of Bahrain, issuing of the first constitutional law, reform project by His Majesty King Hamad, constitutional amendments, establishment of GCC, history of Arab Gulf states. It makes the student able to present his patriotic character through historical discussions.</p>					
MATH501	Integral Calculus with Differential Equations	5	0	5	MATH406
<p>This course provides the students with knowledge and understanding of core concepts, theories and principles in evaluating definite and indefinite integrals and its applications in solving engineering and computing problems. The course also covers solutions to ordinary differential equations which can be used in modeling important applications in the scientific and engineering fields.</p>					
PHYS501	University Physics 1	2	2	3	MATH406
<p>This course is designed to explore the concepts of motion using vectors and other mathematical models and their advanced application, such as the application of Newton's laws of motion, projectile motion, work, energy, momentum and impulse, rotational dynamics, equilibrium of a rigid body, and periodic motion.</p>					

## SECOND YEAR FIRST TRIMESTER

COURSE CODE	COURSE TITLE	LEC Hrs	LAB Hrs	CREDITS	PRE-REQUISITES
CENG511	Computer Programming	2	2	3	CENG411
<p>This course covers problem solving and algorithm development, with emphases on developing good programming habits, and programming in a modern computer language. The course familiarizes the students with the features of object-oriented programming and its applications to solve the problems. It includes a discussion of an overview of the Java language syntax, including packages, classes, methods, variables, conditional statements, and control flow. The laboratory focuses on the implementation of the programming theories and concepts in Java programming language using the tool Java Eclipse.</p>					
ENGL502	Technical Writing	3	0	3	ENGL402
<p>This is an advanced course in English academic writing designed to deal with the application of the technical writing principles with the correspondence on business, science, and technology. It aims to develop the technical writing skills and communication of the college students thru the discussions of its elements and ethics with the use of digital technologies. Furthermore, it enables students to adapt the various communication routes in the workplace, to conceptualize suitable contents of technical writing, to understand the characteristics and other methods of communication techniques, to plan and organize advanced level tasks and to work effectively and with accountability with other team members in a creative and productive manner, in any language learning scenario when achieving personal and group outcomes.</p>					
ENVS400	Environmental Science	3	0	3	SCIE400
<p>This course is an introduction to Environmental Science focusing on interrelationships of the natural world, sustainable development with environmental, economic and societal dimensions, energy transformations, ecological process and relationships, energy flow through systems, human population growth, water processes and cycles, impacts of climate change, "green" electronic processes, energy utilization and efficiency, conventional and</p>					



alternative energy sources, present day agricultural practices, biodiversity and threats by human activity, and conservation issues.					
MATH503	Discrete Mathematics	3	0	3	MATH401
This course introduces fundamental concepts and techniques in set theory in preparation for its many applications in computer science. Topics include logic, proofs, sets, relations, functions, graphs and trees. It simplifies and evaluates basic logic statements including compound statements, implications, inverses, converses, and contra positives using truth tables and the properties of logic.					
ENGG410A	Engineering Drawing	2	2	3	
This course deals with the application of Computer-Aided Drafting Design (CADD) in sketching and drawing to produce engineering drawings. The student will learn the appropriate AutoCAD drawing and modifying commands to generate 2D drawings and orthogonal projections of 3D drawings. The course will cover editing, modifying and plotting 2D and 3D drawings.					
PHYS502	University Physics 2	2	2	3	PHYS501, MATH501
This course is designed to explore the concepts of electricity and magnetism using the concepts of mechanics, vectors, and other mathematical models and their advanced application, such as application of Coulomb's law, Gauss's law, Ohm's law, Kirchhoff's laws, electric potential and potential difference, basic circuits, series and parallel circuits and combinations, magnetic field and flux, induced EMF and applications such as electric motors and basic AC electric generators.					

## SECOND TRIMESTER

COURSE CODE	COURSE TITLE	LEC Hrs	LAB Hrs	CREDITUnits	PREREQUISITES
CENG522	Data Structures & Algorithm	2	2	3	CENG511
This course covers advanced problem solving in linear and non-linear data structures and their implementation. Topics include arrays, sorting and searching techniques, stacks, queues, linked lists, hash tables, trees and graphs. In addition, it covers various strategies for choosing appropriate structures according to the system requirements. The laboratory portion covers the implementation of linear data structures such as stacks and queues and nonlinear data structure like trees and graphs using array and linked list.					
ENGG531	Electric Circuit Theory 1	2	2	3	PHYS502, MATH501
The course deals with the study of core theories, principles and concepts for analysis of DC networks through the application of basic laws and network theorems. It covers the inter relationship between the parameters of DC circuits, critical analysis of complex circuits excited by DC voltages and current sources through basic circuit laws - KVL and KCL and structured methods and theorems like nodal analysis, Mesh analysis, superposition, Maximum power transfer & Millman's theorem.					
MATH502	Advanced Mathematics	2	2	3	MATH501
This course deals with the study of complex numbers, series solutions of ordinary differential equations by power series, Bessel Function, Frobenius method. Basics of Fourier series, Fourier transform, Laplace and inverse Laplace Transforms. Using MATLAB or other mathematical software in order to solve mathematical problems.					
MATH409	Probability and Statistics	3	0	3	MATH503
This course provides a demonstration of the main concepts of probability and statistics with applications. It also covers identifying the theorem of probability and linked with real life problems. How to differentiate between the combination and permutation, explain how to find the mean and variance from the moment generating function. Explain and interpret the findings from different hypothesis tests for decision making. Finally, SPSS will be used to run the statistical measures (e.g. hypothesis tests and regression model).					
CENG523	Advanced Programming	2	2	3	CENG511
This course covers object-oriented techniques using modern fourth generation language. Topics include arrays, recursion, exception handling, inheritance and polymorphism, file handling, and basic applets, strings, GUI, Java events. The laboratory focuses on the development of programs in Java. It starts from the concepts of arrays and progresses from exception handling to basic applets. The implementation of the programming theories and concepts is done in Java programming language using the tool Java Eclipse. Furthermore, engineering students may have additional language Python to use for some exercises.					
PHYS503	University Physics 3	2	2	3	PHYS502
This course is designed to explore the concepts of heat and thermodynamics, waves and optics, relativity, molecular, atomic, and nuclear physics using the concepts of mechanics, electricity and magnetism, vectors, and other mathematical models and their advanced application, such as the application of the laws of thermodynamics, light and electromagnetic waves, Einstein's special theory of relativity, Planck's Quantum theory, de Broglie's					



waves, Heisenberg's Uncertainty Principle, Dirac's electron theory, Hund's Rule, and atomic models from Thompson's to Quantum Mechanical, as well as nuclear models.

### THIRD TRIMESTER

COURSE CODE	COURSE TITLE	LEC Hrs	LAB Hrs	CREDIT Units	PREREQUISITE/S
ENGG534	Electronics 1	2	2	3	ENGG531
This course discusses about core theories, principles and concepts of semiconductors, PN junction diode, other types of diodes & bipolar junction transistor (BJT). It also relates to fundamental diode circuit's application and design; rectifiers, limiters, doublers, Zener diode characteristics and applications, and special purpose diodes. The course evaluates the operation of bipolar junction transistor (BJT), and its characteristic and parameters; BJT as amplifier and switch, DC analysis and different biasing methods.					
CENG534	Principles of Communication	2	2	3	CENG522
The course deals with the This course deals on review on signals and systems, Introduction to communications systems. Amplitude modulation techniques (AM-LC, DSBSC, SSB, VSB and FDM). Frequency modulation techniques (NBFM, WBFM). Sampling, PCM, Pulse Modulation (PAM, PCM, TDM). Introduction to digital communication and digital modulations (MSK, FSK, PSK).					
ENGG611	Electric Circuit Theory 2	2	2	3	ENGG531
This course deals with core theories, principles and concepts of the topics of sinusoidal voltage and current on RLC circuits, vector algebra and its application to AC circuit analysis, sinusoidal and non- sinusoidal single-phase system, and three phase systems. It also covers reactance, impedance, resonance, power in AC circuits, power factor correction and impedance network. The course evaluates the theorems which includes Kirchhoff's laws, Mesh, Superposition, Nodal Analysis, Thevenin's, Norton, and Maximum power transfer.					
ENGG522	Engineering Economy	3	0	3	MATH406
This course deals with the advanced study of the core theories, principles and concepts of economic environment, interest and money-time relationship, depreciation, capital financing, comparing alternatives, replacement studies, break-even analysis, benefit cost ratio, and benefit cost difference. It presents mathematical techniques and practical advice for evaluating decisions in the design and operation of engineering systems.					
MATH504	Multivariate Calculus	2	2	3	MATH501
This is the third part of the course in calculus focused on vector and multi-variable calculus. Topics associated with the course demonstrate advanced knowledge and understanding of the following: vectors and vector operators, calculus of functions of several variables including partial differentiation and multiple integrals, Lagrange multipliers, applications of partial differentiation, line integrals, Green's theorem, Stoke's theorem, and Divergence theorem. The course also includes laboratory components that make use of MATLAB as tool in solving problems in Multivariate Calculus.					
MATH505	Numerical Methods and Analysis	2	2	3	MATH502
This course demonstrates critical knowledge and understanding of specialist theories, principles and concepts of the study of numerical approximations and errors, numerical solutions of non-linear equations, interpolation and curve fittings, numerical differentiation and integration. The course also covers analysis of accuracy of numerical differentiation and integration methods and solution of initial value problems using Euler Method. Analysis of accuracy of Euler's method. The course also includes laboratory components that make use of MATLAB as tool in solving problems in Numerical Analysis.					

### THIRD YEAR

#### FIRST TRIMESTER

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS.	CREDIT Units	PREREQUISITES
ENGG625	Logic Circuit & Switching Theory	2	2	3	ENGG534
This course provides critical knowledge and understanding of designing digital logic circuits. It covers number systems and conversion, Boolean algebra, algebraic manipulation, applications of Boolean algebra, Karnaugh maps, multi-level gate circuits, multiplexers, decoders, comparators, latches and flip-flops, registers, counters and introduction to HDL. Through laboratory and in-course project, the students will creatively implement complex applications of digital logic circuits.					



CENG611	Data Communication and Networking 1	2	2	3	CENG534
This course integrates the core theories, principles, concepts, structure, functions and components of the Internet and computer networks. The OSI and TCP/IP models are used to examine the services and the associated protocols in each layer. The concepts and structure of IPv4 addressing and subnetting, its application, operation and implementation to networks are discussed. The laboratory part makes use of a range of approaches including the Packet Tracer and GNS3 to allow students to implement static routing and critically analyze network requirements, issues and/or problems. These simulators will allow the students to build networks, use appropriate devices and IP addresses, and perform configurations.					
ENGG613	Electronics 2	2	2	3	ENGG534
This is an advanced course in electronics which deals with concept, analysis and design of electronic circuits using linear and integrated devices. In this course include AC and DC analysis, principles and concepts of frequency response of BJT amplifier and further extends the study to multistage amplifier and various FET. The other topics include study and critical analysis of Operational Amplifier, its application, Feedback topologies & explore NE555 Timer and its applications.					
ENGG640	Signals and Systems	2	2	3	ENGG611, MATH504
This course covers the study of the core topics, principles of signal and noise, modulation and demodulation. It also discusses the specialist theories and principles of application of signals in the field of amplitude modulation and frequency modulation covering modulation index, bandwidth, side frequencies, power distribution and calculation, modulator circuits. Moreover, spectral analysis, bandwidth, efficiency, various transforms, and filters will also be covered.					
ENGG612	Electromagnetics	3	0	3	ENGG611
This course covers core topics on electric and magnetic fields that emphasizes about fundamental concepts and applications in electromagnetic. Topics include: vector analysis, coulomb's law and electrical field intensity, electric flux density, gauss's law, magnetic flux, magnetic flux density, magnetic potential, time varying fields, concepts and applications of Maxwell equations, electromagnetic waves and propagation, plane waves and reflection, waveguides, and Antennas.					
MATH506	Linear Algebra	2	2	3	MATH504
This course use specialist level skills to relate to and adapt main and core theories and concepts in the study of matrices and determinants, and their applications in numerical solutions of systems of linear equations. It also includes important topics such as linear transformations, eigenvalues and eigenvectors, complex vectors and matrices and numerical linear algebra. In the laboratory, MATLAB is use as mathematical software and solutions to a variety of mathematical problems are determined.					

## SECOND TRIMESTER

COURSE CODE	COURSE TITLE		AB	CREDIT Units	PREREQUISITES
CENG622	Data Communication and Networking 2	2	2	3	CENG611
This course provides an in-depth and advanced discussion of routing technology. It integrates the core theories, concepts, functions and operations of a router including the principles and applications of routing protocols. Topics include router components and configuration; Unicast and Multicast routing protocols: RIPv1, RIPv2, EIGRP, OSPF and BGP; VLSM and IPv6. The students make use of a range of approaches including the Packet Tracer, GNS3 and the actual network devices in the laboratory in performing advanced and complex network configurations using the different routing protocols and in the critical analysis of network requirements, issues and/or problems.					
CENG623	Advanced Logic Circuits and Design	2	2	3	ENGG625
This course provides critical knowledge and understanding of analysis and design of synchronous and asynchronous sequential circuits based on core theories, principles and concepts of combinational circuit and Hardware Description Language(HDL) Topics covered include design of Decimal Adder, Binary multiplier, multiplexer, Demultiplexer, encoder, decoder, design of sequential circuits like registers and counters, HDL models for combinational and sequential circuits, combinational PLDs and introduction to FPGA.					
MATH508	Partial Differential Equations	3	0	3	MATH505
This course provides advanced knowledge and understanding to the three main types of partial differential equations and their characteristic solutions that will allow students to critically evaluate the nature of the					



corresponding solutions, namely: elliptic, hyperbolic and diffusion. The general topics include Laplace Equation, Heat Equation, Wave Equation, Poisson's Equation and Fourier transforms. Through the course, the students will undertake analysis, evaluation, and/or synthesize information and concepts of engineering applications, with the detailed understanding of partial differential equations.					
ENGG614	Control Systems	2	2	3	ENGG640
The course deals with the study of the concepts of control systems. It also covers the discussion of the mechanical and electrical modeling using conventional differential equations, reduction rules applied to block-diagram of linear control systems and signal flow graph. Laplace and Inverse Laplace Transformations. Discussion of time-domain response of first and second order control systems, steady-state errors, Routh-Hurwitz Criterion for stability, root locus method, frequency response (bode diagram and polar plot), Nyquist stability criterion, and compensator design techniques. MATLAB is used for analyzing and simulating control systems.					
CENG624	Computer Organization and Architecture	2	2	3	ENGG625
This course covers computer arithmetic, computer function, components and their interconnections. It also includes discussion on memory hierarchy and organization; I/O peripherals and interfacing; instruction sets based on 8086 microprocessors, addressing modes and access; processor structure and functions including interrupts, RISC and CISC. The laboratory uses Assembly Language Program software which is a microprocessor emulator with editor, assembler and debugger.					
CENG625	Power Electronics	2	2	3	ENGG613
This course covers the power electronics semiconductor switches, Thyristor, Triac, GTO and advanced types of power transistor. Triggering devices: UJT, DIAC, and PUT. Types of power conversion: single phase and three phase uncontrolled and controlled rectifiers and their performance. AC voltage regulator, inverters single phase and three phases with PWM techniques.					

### THIRD TRIMESTER

COURSE CODE	COURSE TITLE	LEC Hrs	LAB Hrs	CREDITUnits	PREREQUISITES
CENG636	Data Communication and Networking 3	2	2	3	CENG622
This course provides critical knowledge and understanding of the theoretical and practical approaches about technologies and protocols in the design and implementation of switched networks. Students learn about advanced and complex hierarchical network design model. The course tackles switch functionalities and implementations using VLAN, VTP, STP, Inter-VLAN, Link- Aggregation Protocol and WLAN. The laboratory sessions provide practical and actual approaches to learning advanced and complex switch configurations and troubleshooting using the different protocols mentioned.					
ENGG638	Engineering and Project Management	3	0	3	ENGG522
This course provides critical knowledge and understanding of project management and the essential tools needed to deliver successful projects on time and on budget from the standpoint of the manager, who must skillfully organize, plan, implement and control non-routine activities to achieve schedule, budget and performance activities. Topics include project life cycles, principles and concepts of strategic management process in project selection and organization, planning, budgeting and scheduling systems. It also covers planning and control methods such as PERT- CPM, Gantt Charts, earned value techniques, project audits, and risk management to critically evaluate various project management situations.					
CENG637	Operating Systems	2	2	3	CENG624
This course provides detailed information about the components and functionalities of operating systems. Topics include operating system structures, process management & scheduling, memory management, virtual memory management, deadlocks, file systems, directory structure, protection, security and distributed operating systems. In laboratory, the various operating system commands are illustrated using DOS, Cygwin tools and the implementation of scheduling, memory management and page replacement algorithms using Java.					
CENG638	Digital Control Systems	2	2	3	ENGG614
The course deals with core theories, principles and concepts of Digital Control Systems, z-plane Analysis, Sampling and Reconstruction, Open-Loop and closed-loop Discrete-Time Systems, Time-Response Characteristics, Stability Analysis of Discrete-Time Control Systems, Design of Discrete-Time Controllers, Pole-Placement and Observer					



Design, and Linear Quadratic Optimal Control. MATLAB is used for analyzing and simulating digital control systems.					
CENG639	Microprocessor Systems	2	2	3	CENG624, CENG623
This course demonstrates advanced knowledge and understanding on the functions Microprocessor architecture and organization, type of buffering techniques data representation, addressing modes and instruction sets. Memory, PPI, PIT and serial Interfacing with Address decoding, I/O mapping and subsystem, interrupts and other peripheral controller and Programming. Practice of the design of a microprocessor system based on Intel 86xxx microprocessor.					
MATH507	Optimization Methods	3	0	3	MATH505
The course takes a unified view of optimization and covers the main areas of application of core optimization algorithms. The topics include linear optimization, robust optimization, network flows, dynamic optimization and non-linear optimization.					

#### FOURTH YEAR

##### FIRST TRIMESTER

COURSE CODE	COURSE TITLE	LEC Hrs	LAB Hrs	CREDIT Units	PREREQUISITES
CENG641	Digital System Design	2	2	3	CENG623
This course covers topics in the advanced design and analysis of digital circuits with VHDL. The primary goal is to provide in depth understanding of logic and system design, synthesis, and optimization. The course enables students to apply their knowledge for the design of digital hardware systems with corresponding memory modules and reconfigurable programmable logic devices (PLDs and FPGAs). Verilog HDL will be used for simulation and synthesis of the lab exercises and final design project.					
CENG642	System Analysis and Design	2	2	3	CENG522
The course describes the concepts and methods used in the analysis and design of computer-based information systems. It includes the discussion of typical computer systems life cycles, system requirements and specification, feasibility concerns, system design, fault tolerance, people and interface issues, compliance with ethical and legal standards and quality issues. The laboratory focuses on training the students with hands-on experience Microsoft Visio using UML.					
CENG643	Technopreneurship	3	0	3	ENGG638
The course deals with the study of entrepreneurship in IT industry by applying the core theories and principles of entrepreneurship and management in IT business. The course covers types of entrepreneurship, legal factors related to the project like Business act, company act, technology act and Industrial act, developing a Business plan by integrating business proposal writing skill, software skills, innovation and creativity skills. It also covers advanced level topics like risk management, configuration management and quality management.					
CENG644	Data Communication and Networking 4	2	2	3	CENG636
This course provides critical knowledge and understanding of the theoretical and practical approaches to WAN technologies and network services required by converged applications in complex enterprise networks. Topics include Point-to-Point (PPP) concepts, Frame Relay, Access Control Lists (ACLs), Network Security and Monitoring, VPN technology, IP addressing services and Quality of Service. The laboratory sessions provide practical and actual approaches to learning advanced and complex implementation and configuration of WAN technologies and protocols as mentioned.					
CENG645	Real Time Embedded Systems	2	2	3	CENG638
This course provides critical knowledge and understanding of real time embedded systems design, development, and implementation. It includes embedded system types, microcontroller architecture, programming, digital and analog I/O interfacing, task scheduling and time-controlled interrupts handling. Explores communication methods and real-time operating systems. Creatively evaluates complex embedded systems design requirements and specifications, reviews embedded systems emerging applications.					
ENGG501	Safety Engineering	2	0	2	4 <sup>th</sup> Year Standing
This course deals with the detailed study of the principles of safety engineering and applications of safety principles to industrial and commercial systems. It covers topics concerning safety management, occupational health, fire prevention and control, electrical safety and environmental safety. Further, students will learn how to conduct risk analysis and some of the mitigation measures					



## SECOND TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	CREDIT Units	PREREQUISITES
ENGG639	Professional Ethics and Engineering Laws	3	0	3	4 <sup>TH</sup> year standing
<p>This course covers topics in the core theories and concepts of ethics, law, contracts, intellectual property, the responsible engineer, moral thinking, risk/safety/liability, employer responsibilities, product liability, and environmental responsibilities. The course deals with several case studies of ethical problems in engineering. It discusses the core concepts of environmental protection and sustainability to understand how they relate to engineering ethics. The course is intended to promote greater reflection by engineers on their activities to better understand the social dimensions of engineering practice. It also provides a historical perspective on society's environmental concerns, and discusses environmental statutes, our regulatory system, approaches to preventing and mitigating environmental problems, and the elements of an effective environmental management system.</p>					
CENG656	Network Security	2	2	3	CENG642
<p>This course discusses the essentials and underlying of network security with emphasis on secure network administration principles. It includes compliance and operational security, threats and vulnerabilities, controls and protection methods, and encryption and authentication technologies in order to attain secured working environment. In laboratory part, Cisco networking simulation tools are used to simulate, configure and apply Cisco compatible authentication protocols on the simulated networks.</p>					
CENG657	Industrial Attachment	0	6	6	4 <sup>th</sup> year standing
<p>This course is the practicum course where the students are exposed to actual work environment. The students are required to complete 240 hours of on-site training. They are sent to work environments under the supervision of a practicum professor. Moreover, at the end of the course, individual student submits a final report and a performance evaluation made by the on-site supervisor.</p>					
CENG658	Software Engineering	2	2	3	CENG641
<p>This course demonstrates the application of software design paradigms; identify software requirements and use Computer Aided Software Engineering in designing and developing efficient software application. The course covers an in-depth survey of software process, project management, project metrics, project scheduling, risk management, software testing and software quality assurance. The course also covers the implementation of the proposed system using structured programming, software reviews, software testing techniques and strategies, software maintenance. The laboratory focuses on providing students with hands-on experience using different tools to design a mini project such as Microsoft Visio, Visual Studio and others. This course demonstrates the application of software design paradigms; identify software requirements and use Computer Aided Software Engineering in designing and developing efficient software application. The course covers an in-depth survey of software process, project management, project metrics, project scheduling, risk management, software testing and software quality assurance. The course also covers the implementation of the proposed system using structured programming, software reviews, software testing techniques and strategies, software maintenance.</p>					
CENG659	Computer Engineering Design Project A	0	6	3	4 <sup>th</sup> Year Standing
<p>This is the first of two courses in Computer Engineering design sequence which prepares students for engineering practice through a culminating major design experience or capstone based on the knowledge and skills acquired in foundation and core courses and incorporating appropriate engineering standards (IEEE, ISO) as an integral part and with due consideration of multiple realistic constraints tradeoffs. This is a group supervised design project in which students analyze, specify, design, construct, evaluate and adapt physical computing in various applications such as in smart environments and embedded systems. They also incorporate design standards and make decision as a result of multiple design tradeoff/constraints (economics, environmental, social, political, ethical, health and safety, manufacturability, and sustainability) analysis and evaluation as part of the design process.</p>					



THIRD TRIMESTER

COURSE CODE	COURSE TITLE		LAB Hrs	CREDIT Units	PREREQUISITES
CENG661	Major Elective 1	2	2	3	4 <sup>th</sup> Year Standing
	Digital Communication				
<p>The course deals with the core theories, principles and concepts of digital communications principles and systems. It covers the systems of base band modulation schemes like pulse code modulation (PCM), Differential PCM (DPCM), delta and adaptive delta modulation (DM and ADM), time division multiplexing (TDM) and their applications. Also, topics like line coding, multi-rate line coding, detection and synchronization of digitally transmitted signals are covered. The course covers another important part of digital communications, namely, band pass digital modulation techniques like amplitude shift keying (ASK), phase shift keying (PSK), and frequency shift keying (FSK). Performance analysis of digital communications systems based on probability of error in detection and bandwidth constraints is discussed thoroughly. Modern communications techniques like spread spectrum is given in the end of the course as well as some case studied in digital communications field.</p>					
	Wireless Communication	2	2	3	4 <sup>th</sup> Year Standing
<p>This course aims to develop the core knowledge of communications theories and their applications in digital communications. The course covers the structure of the digital communication systems, analog modulation technique, digital modulation techniques, probability of error in digital communication system, multiple access techniques, channels and source encoding, mobile communication systems</p>					
	Digital Signal Processing	2	2	3	4 <sup>th</sup> Year Standing
<p>The course deals with digital signal processing; discrete convolution; Z-transform; sampled data system; digital filters; discrete Fourier transforms; fast Fourier transforms. DSP Applications. Introduction of 2-D signal (image) processing. This course is designed to provide students with a comprehensive treatment of the important issues in design, implementation and applications of digital signal processing theory and algorithm. Further, computer simulation exercises are intended to familiarize the student with implementation aspects and the application of theoretical knowledge to practical problems.</p>					
CENG662	Computer Engineering Design (Project B)	0	6	3	CENG659
<p>This course is a continuation of Informatics Engineering Design A (CENG639) which enables students to design a system, component, or process to meet desired needs within realistic constraints through a culminating major design experience or capstone based on the knowledge and skills acquired in foundation and core courses and incorporating appropriate engineering standards (IEEE, ISO) as an integral part and with due consideration of multiple realistic constraints tradeoffs. This is a group supervised design project in which students analyze, specify, design, construct, evaluate and adapt physical computing application in smart environments and embedded systems. They also incorporate design standards and make decisions as a result of multiple design tradeoff/constraints (economics, environmental, social, political, ethical, health and safety, manufacturability, and sustainability) analysis and evaluation as part of the design process.</p>					
CENG663A	Major Elective 2 (Special Topics in Computer Engineering)	2	2	3	4 <sup>th</sup> Year Standing
<p>The course deals with advanced and complex theories, principles, concepts and special topics dealing with current and recent trends and developments, advances and emerging technologies in the field of Computer Engineering. Topics include: IoT and Cloud Computing, Network Function Virtualization, Virtual and Augmented Reality, Deep Learning, Modern Artificial Intelligence and other emerging topics. (Topics proposed for this course shall be submitted to the department at least one semester ahead and will be offered only upon Department approval)</p>					
CENG663B	Major Elective 2(Robot Kinematics, Dynamics and Control)	2	2	3	4 <sup>th</sup> Year Standing
<p>This course facilitates the core learning and understanding of robot manipulators for students to understand complex design and applications of robots in industrial application. Successful completion allows student to formulate the kinematics and dynamic modelling of robotic manipulators consisting of a serial chain of rigid bodies and to implement control algorithms with sensory feedback during the lab sessions. Students will gain specialist skills in dealing with complex control architecture and manipulator structure typical to new-generation robots.</p>					



CENG663C	Major Elective 2 Machine Vision	2	2	3	4 <sup>TH</sup> year standing
<p>This course discusses about core theories, principles and concepts of machine vision devices and techniques and also learns about computer vision systems and digital image processing. It also relates to fundamental issues and techniques of computer vision and image processing. Emphasis will be on physical, mathematical, image-processing, pattern recognition, and feature extraction aspects of vision. The course will have a proper Lab activity to enable students understand the breadth and depth of the lecturing materials. The main topics that will be as: Machine vision concepts, Image acquisition, Lighting, Image formation, Image conversion, Image processing and analysis. Image enhancement, Edge detection and Image segmentation.</p>					



<b>1. Teaching Institution</b>	University of Technology Bahrain
<b>2. University Department</b>	College of Engineering
<b>3. Programme Title</b>	Bachelor of Science in Mechatronics Engineering (BSME)
<b>4. Title of Final Award</b>	Bachelor of Science in Mechatronics Engineering (BSME)
<b>5. Mode of Attendance</b>	Actual classroom learning interactive
<b>6. National Qualification Framework Level and Credit</b>	NQF Level 8 612 NQF Credits (204 ACS Credits)
<b>7. Accreditation</b>	ABET Engineering Accreditation Commission (EAC)
<b>8. Other external influences</b>	<p><b>Local External Influences/References</b> Ministry of Education (MOE), Higher Education Council (HEC) Education and Training Quality Authority (BQA)</p> <p><b>International External Influences/References</b> Accreditation Board for Engineering and Technology (ABET)</p>
<b>9. Date of production/revision of this specification</b>	September 2020
<b>10. Aims of the Programme</b>	
<p>The Bachelor of Science in Mechatronics Engineering is an engineering programme which combines mechanical, electronic, electrical, and computer engineering. It is an interdisciplinary scientific area focusing on the study and design of intelligent programmable systems from an engineering perspective and looks into the design, development and controlling of advanced hybrid systems.</p> <p>Graduates of the programme, three (3) to five (5) years after graduation shall be able to:</p> <ol style="list-style-type: none"> <li>1. Pursue careers in Mechatronics Engineering or related fields towards the improvement of engineering practice.</li> <li>2. Engage in lifelong learning toward completion of advanced/continuing education or other learning opportunities.</li> <li>3. Demonstrate professional success through strengthened networks and/or positions of increasing social responsibility.</li> </ol>	
<b>11. Learning Outcomes, Teaching, Learning and Assessment Methods</b>	
<ol style="list-style-type: none"> <li>1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics</li> <li>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</li> <li>3. An ability to communicate effectively with a range of audiences</li> </ol>	

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
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 objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

#### **Teaching and Learning Methods**

1. Constructive Method. Learners must be fully engaged and active in the process of constructing meaning and knowledge based on their prior knowledge and experiences through the process of doing, making, writing, designing, creating and solving. It allows teachers to implement differentiated learning, authentic assessment practices and incorporate technologies to improve individual learning experiences. It includes simulations, in-course projects, field trips, digital content, group discussions and reflections. This method strive to improve achievement by consciously developing learners' ability to consider ideas, analyze perspectives, solve problems and make decisions on their own thereby making them more responsible and independent.
2. Inquiry based Method. Learners develop cognitive skills like critical thinking and problem solving by working on questions, problems, or scenarios and formulate creative solutions. The teachers use structured, guided or open inquiry to facilitate learning. As a process, learners are involved in their learning by formulating questions, investigating, building their understanding and creating meaning and new knowledge on a certain lesson. Typically activities include laboratory sessions and research-based activities.
3. Collaborative Method. Learners are divided into small groups to learn something together and capitalize on one's other resources and skills, evaluating one another ideas, and monitoring one another's work. It allows students to actively interact by sharing experiences and take on different roles. Typically, students are provided with problems or projects that they work on together to search for understanding, meaning, or solutions and each group is expected to work together developing or formulating solutions and present the solution in class. The activities include think-pair-share, jigsaw, or round-robin which effectively engage students to complete the tasks.
4. Experiential learning method is the process of learning by doing. By engaging students to hands on experience which attempts to apply theories and knowledge learned in the classroom to real-world situations. This may include team challenges, simulations, company visits/fieldworks and other extracurricular activities. Experiential learning opportunities exist in a variety of course- and non-course-based forms and may include community service, service-learning, undergraduate research, study abroad, and culminating experiences such as internships, student teaching, and capstone projects.

#### **Assessment Methods**

- Assessment is through a combination of written examinations (essays, class tests, homework) and assessed coursework (problem sets, laboratory exercises and machine problems).



## 12. Programme Structure

### BACHELOR OF SCIENCE IN MECHATRONICS ENGINEERING (BSME) CURRICULUM PLAN EFFECTIVE SY2019-2020

#### REMEDIAL CLASSES

COURSE CODE	COURSE TITLE	LEC	LAB	UNITS	PRE-REQUISITES
ENGL301	Speaking and Listening	9	0	0	
ENGL302	Grammar and Vocabulary	9	0	0	
MATH300	Remedial Mathematics	3	0	0	

#### FIRST YEAR

##### FIRST TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
ARAB400A	Arabic Language	3	0	3	
CHEM400	General Chemistry 1	2	2	3	
CENG411	Introduction to Computing	2	2	3	
ENGL401	English Communication Skills 1	3	0	3	
EUTH400	Euthenics 1	1	0	0	
MATH401	College Algebra	3	0	3	
MATH402	Plane and Spherical Trigonometry	3	0	3	
<b>TOTAL</b>				18	

##### SECOND TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
CENG511	Computer Programming	2	2	3	CENG411
ENGL402	English Communication Skills 2	3	0	3	ENGL401
EUTH401	Euthenics 2	1	0	0	EUTH400
HIST400	History of Bahrain and GCC Region	3	0	3	
MATH406	Differential Calculus with Analytic Geometry	5	0	5	MATH401, MATH402
SOCI400	Sociology	3	0	3	
<b>TOTAL</b>				17	

##### THIRD TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
CENG523	Advanced Programming	2	2	3	CENG511
ENGL403	Speech and Oral Communication	2	2	3	ENGL402
MATH501	Integral Calculus with Differential Equations	5	0	5	MATH406
PHYS501	University Physics 1	2	2	3	MATH406
SCIE400	Biology	2	2	3	
<b>TOTAL</b>				17	



**SECOND YEAR  
FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
ENVS400	Environmental Science	3	0	3	SCIE400
ENGL502	Technical Writing	3	0	3	ENGL402
ENGG410A	Engineering Drawing	2	2	3	
ENGG520	Engineering Materials	3	0	3	CHEM400
MATH503	Discrete Mathematics	3	0	3	MATH401
PHYS502	University Physics 2	2	2	3	PHYS501, MATH501
<b>TOTAL</b>				18	

**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
ENGG531	Electric Circuit Theory 1	2	2	3	MATH501, PHYS502
ENGG532	Thermodynamics	3	0	3	PHYS501
HUMR400	Human Rights	3	0	3	SOCI400
MATH409	Probability and Statistics	3	0	3	MATH503
MATH502	Advanced Mathematics	3	0	3	MATH501
PHYS503	University Physics 3	2	2	3	PHYS502
<b>TOTAL</b>				18	

**THIRD TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PREREQUISITE/S
ENGG521	Engineering Mechanics	3	0	3	PHYS501
ENGG522	Engineering Economy	3	0	3	MATH406
ENGG534	Electronics 1	2	2	3	ENGG531
ENGG611	Electric Circuit Theory 2	2	2	3	ENGG531
MATH504	Multivariate Calculus	2	2	3	MATH501
MATH505	Numerical Methods and Analysis	2	2	3	MATH502
<b>TOTAL</b>				18	

**THIRD YEAR  
FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
CENG611	Data Communication and Networking 1	2	2	3	CENG411
ENGG535	Fluid Mechanics	3	0	3	MATH406
ENGG613	Electronics 2	2	2	3	ENGG534
ENGG615	Electromagnetics and Electrical Machines	3	0	3	ENGG611
ENGG627	Logic Circuit, Switching Theory and Programmable Logic Devices	3	2	4	ENGG534
MATH506	Linear Algebra	2	2	3	MATH504
<b>TOTAL</b>				19	



**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
ENGG501	Safety Engineering	2	0	2	ENGG611
ENGG533	Strength of Materials	3	0	3	ENGG521
MECH610	Pneumatics and Electro-Pneumatics	2	2	3	ENGG535, ENGG627
ENGG614	Control Systems	2	2	3	ENGG611
MECH631A	Power Electronics	3	2	4	ENGG613
MECH633	Introduction to Fuzzy/Neural System	3	2	4	ENGG627 MATH503
<b>TOTAL</b>				19	

**THIRD TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
MATH507	Optimization Methods	3	0	3	MATH505
MECH621	Linear Systems	2	2	3	ENGG614
MECH623	Hydraulics and Electrohydraulics	3	2	4	ENGG535, ENGG627
MECH624	Programmable Logic Controllers	3	2	4	MECH610
MECH641	Process Instrumentation and Control	3	2	4	ENGG532, ENGG614
<b>TOTAL</b>				18	

**FOURTH YEAR  
FIRST TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
ENGG639	Professional Ethics and Engineering Laws	3	0	3	ENGG501
MECH639	Microcontrollers	2	2	3	ENGG627
MECH642	Machine Vision	3	2	4	MECH621
MECH643	Robot Kinematics, Dynamics and Control	3	2	4	MECH631, MECH621
MECH644	Modular Production System	3	2	4	MECH624
<b>TOTAL</b>				18	

**SECOND TRIMESTER**

COURSE CODE	COURSE TITLE	LEC	LAB	Units	PRE-REQUISITES
ENGG638	Engineering and Project Management	3	0	3	ENGG522
MECH651	Industrial Attachment	0	6	6	MECH644
MECH652	Mechatronics Engineering Design Project A	0	6	3	MECH641, MECH643
<b>TOTAL</b>				12	



### THIRD TRIMESTER

COURSE CODE	COURSE TITLE	LEC	LAB	CREDIT	PRE-REQUISITES
MECH645	Technopreneurship	3	0	3	ENGG638
MECH653	Major Elective 1	2	2	3	SEE LIST BELOW
MECH661	Mechatronics Engineering Design Project B	0	6	3	MECH652, ENGG638
MECH662	Major Elective 2	2	2	3	SEE LIST BELOW
<b>TOTAL</b>				<b>12</b>	
<b>Grand Total</b>				<b>204</b>	

### ELECTIVE COURSES

#### MAJOR ELECTIVE 1

COURSE CODE	COURSE TITLE	LEC	LAB	CREDIT	PRE-REQUISITES
MECH653A	Data Communication and Networking 2	2	2	3	CENG611
MECH653C	System Modeling and Simulation	2	2	3	ENGG614
MECH653D	Digital Control Systems	2	2	3	ENGG614

#### MAJOR ELECTIVE 2

COURSE CODE	COURSE TITLE	LEC	LAB	CREDIT	PRE-REQUISITES
MECH662A	Wireless Communications	2	2	3	CENG611
MECH662C	Digital Signal Processing	2	2	3	MECH639
MECH662D	Power Plant	2	2	3	ENGG532

### 13. Awards and Credits

Degree/ Certificate Awarded	Bachelor's Degree
Total Units for Degree	204
Total Trimesters Completed	12

### 1. CURRICULUM SKILLS MAPPING

Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Programme Learning Outcomes / Student Outcomes						
				SO1	SO2	SO3	SO4	SO5	SO6	SO7
Year 1 1st Tri	ARAB400A	Arabic Language	(C)				✓			
	CHEM400	General Chemistry 1	(C)	✓				✓	✓	✓
	CENGI411	Introduction to Computing	(C)	✓					✓	
	ENGL401	English Communication Skills 1	(C)			✓				
	EUTH400	Euthenics 1	(C)							
	MATH401	College Algebra	(C)	✓						
Year 1 2nd Tri	MATH402	Plane and Spherical Trigonometry	(C)	✓						
	CENG511	Computer Programming	(C)	✓					✓	
	ENGL402	English Communication Skills 2	(C)			✓				
	EUTH401	Euthenics 2	(C)							
	HIST400	History of Bahrain and GCC Region	(C)				✓			
	MATH406	Differential Calculus with	(C)	✓						



1. CURRICULUM SKILLS MAPPING										
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Programme Learning Outcomes / Student Outcomes						
				SO1	SO2	SO3	SO4	SO5	SO6	SO7
		Analytic Geometry								
	SOCI400	Sociology	(C)				✓			
Year 1 3rd Tri	CENG523	Advanced Programming	(C)	✓					✓	
	ENGL403	Speech and Oral Communication	(C)			✓				
	MATH501	Integral Calculus with Differential Equations	(C)	✓						
	PHYS501	University Physics 1	(C)	✓				✓	✓	
	SCIE400	Biology	(C)	✓				✓	✓	✓
Year 2 1st Tri	ENVS400	Environmental Science	(C)				✓			✓
	ENGL502	Technical Writing	(C)			✓				
	ENGG410A	Engineering Drawing	(C)	✓					✓	
	ENGG520	Engineering Materials	(C)	✓			✓			
	MATH503	Discrete Mathematics	(C)	✓						
	PHYS502	University Physics 2	(C)	✓				✓	✓	
Year 2 2nd Tri	CENG523	Advanced Programming	(C)	✓	✓		✓		✓	✓
	ENGG531	Electric Circuit Theory 1	(C)	✓	✓	✓		✓	✓	
	ENGG532	Thermodynamics	(C)	✓						✓
	HUMR400	Human Rights	(C)				✓			
	MATH409	Probability and Statistics	(C)	✓						
	MATH502	Advanced Mathematics	(C)	✓					✓	✓
	PHYS503	University Physics 3	(C)	✓				✓	✓	✓
Year 2 3rd Tri	ENGG521	Engineering Mechanics	(C)	✓						
	ENGG522	Engineering Economy	(C)	✓			✓			
	ENGG534	Electronics 1	(C)	✓	✓	✓		✓	✓	
	ENGG611	Electric Circuit Theory 2	(C)	✓	✓	✓		✓	✓	✓
	MATH504	Multivariate Calculus	(C)	✓					✓	✓
	MATH505	Numerical Methods and Analysis	(C)	✓					✓	✓
Year 3 1st Tri	CENG611	Data Communication & Networking 1	(C)	✓				✓	✓	✓
	ENGG535	Fluid Mechanics	(C)	✓						✓
	ENGG613	Electronics 2	(C)	✓	✓	✓		✓	✓	✓
	ENGG615	Electromagnetics and Electrical Machines	(C)	✓						✓
	ENGG627	Logic Circuit, Switching Theory and Programmable Logic Devices	(C)	✓	✓		✓	✓	✓	✓
	MATH506	Linear Algebra	(C)	✓					✓	✓
Year 3 2nd Tri	ENGG501	Safety Engineering	(C)				✓			
	ENGG533	Strength of Materials	(C)	✓						
	MECH610	Pneumatics and Electro-Pneumatics	(C)	✓	✓	✓		✓	✓	
	ENGG614	Control Systems	(C)	✓	✓				✓	✓
	MECH631A	Power Electronics	(C)	✓	✓	✓		✓	✓	
	MECH633	Introduction to Fuzzy/Neural System	(C)	✓	✓	✓		✓	✓	✓
Year 3 3rd Tri	MATH507	Optimization Methods	(C)	✓						
	MECH621	Linear Systems	(C)	✓	✓	✓		✓	✓	✓
	MECH623	Hydraulics and Electrohydraulic	(C)	✓	✓	✓		✓	✓	✓
	MECH624	Programmable Logic Controllers	(C)	✓	✓	✓		✓	✓	✓
	MECH641	Process Instrumentation and	(C)	✓	✓	✓		✓	✓	✓



1. CURRICULUM SKILLS MAPPING										
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Programme Learning Outcomes / Student Outcomes						
				SO1	SO2	SO3	SO4	SO5	SO6	SO7
		Control								
Year 4 1st Tri	ENGG639	Professional Ethics, Laws and Contracts	(C)				✓			
	MECH639	Microcontroller	(C)	✓	✓	✓		✓	✓	✓
	MECH642	Machine Vision	(C)	✓	✓	✓		✓	✓	✓
	MECH643	Robot Kinematics, Dynamics and Control	(C)	✓	✓	✓		✓	✓	✓
	MECH644	Modular Production System	(C)	✓	✓	✓		✓	✓	✓
Year 4 2nd Tri	ENGG638	Engineering and Project Management	(C)	✓		✓	✓	✓		
	MECH651	Industrial Attachment	(C)	✓		✓	✓	✓		✓
	MECH652	Mechatronics Engineering Design Project A	(C)	✓	✓	✓	✓	✓	✓	✓
Year 4 3rd Tri	MECH645	Technopreneurship	(C)			✓	✓	✓	✓	✓
	MECH653A	Major Elective 1: Data Communication and Networking 2	(O)	✓	✓			✓	✓	✓
	MECH653D	Major Elective 1: Digital Control Systems	(O)	✓	✓	✓			✓	✓
	MECH653C	Major Elective 1: System Modeling and Simulation	(O)	✓	✓	✓			✓	✓
	MECH661	Mechatronics Engineering Design Project B	(C)	✓	✓	✓	✓	✓	✓	✓
	MECH662A	Major Elective 2: Wireless Communications	(O)	✓	✓	✓		✓	✓	✓
	MECH662D	Major Elective 2: Power Plant	(O)	✓	✓	✓	✓		✓	✓
	MECH662C	Major Elective 2: Digital Signal Processing	(O)	✓	✓	✓	✓		✓	✓

## Course Description

### REMEDIAL CLASSES

COURSE CODE	COURSE TITLE	LEC Hrs	LAB Hrs	CREDIT UNITS	PRE-REQUISITES
MATH300	Remedial Mathematics	3	0	0	
<p>This course is a comprehensive study of mathematical skills in arithmetic which should provide a strong mathematical foundation to pursue formal courses in college mathematics. Topics include principles and applications of whole numbers, fractions, decimals, percent, rates, ratio and proportion, measurements and prerequisite concepts for algebra, geometry and statistics.</p>					
ENGL301	Speaking and Listening	9	0	0	
<p>ENGL301 is a required remedial course for entering students whose English language skills need further improvement and enhancement to be able to cope with the university's academic courses. It utilizes an integrated approach in developing the students' English macro skills with emphasis on speaking and listening. Further, this course introduces the students to English language arts where they get involved and engaged in three phases (beginner, intermediate and advanced). It intensifies its course intended learning objectives with the utilization of audio-lingual presentations where the students are expected to gain more knowledge to communicate effectively in English.</p>					
ENGL302	Grammar and Vocabulary	9	0	0	
<p>ENGL302 is a required remedial course for entering students whose English language skills need further improvement and enhancement to be able to cope with the university's academic courses. It utilizes an integrated approach in developing the students' skills in grammar and vocabulary in three phases (beginner, intermediate and advanced). In addition, it includes information related to dictionary use, basic grammar rules and daily use</p>					



vocabulary words through a variety of contexts, written responses, idioms, writing structures, settings of writing and the process of forming written communication where the students are expected to gain more knowledge to communicate effectively in English.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ARAB400A	Arabic Language	3	0	3

يركز مقرر ARAB400 على دراسة أساسيات اللغة العربية كقراءة وتحليل و نقد وبيان خصائص النصوص المطلوبة التي تتناول مختلف الأجناس الأدبية نثرا وشعرا. كما يركز هذا المقرر على دراسة وفهم وتطبيق القواعد النحوية والأساليب الصرفية الأساسية في اللغة العربية مع مراعاة مهارات الكتابة الإملائية الصحيحة.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
CHEM400	General Chemistry 1	2	2	3

This course demonstrates atomic theories, relationships between structure and properties of matter, scientific notation, density calculation, Atomic structure and energy levels, periodic table, ions formation and chemical bonding , chemical reactions and emphasizing the chemical change, balancing equation, Discussion on gas law includes properties and application of gas laws, Acids and bases, solution and clarification of acid – base concept.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
CENG411	Introduction To Computing	2	2	3

This course covers the basic concepts of computer hardware and software. It includes the discussion of microcomputer systems and workstations; networking and the internet and the interdisciplinary science of computing. It also provides a discussion of problem solving and algorithm development. Laboratory sessions focus on the use of word processing, spreadsheets and presentations using Microsoft Office applications.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGL401	English Communications Skills 1	3	0	3

This is an introductory course in English communication designed to provide comprehensive, up-to-date and relevant instruction in the correct use of grammar. It intends to build up students' confidence in communicating their thoughts, ideas, information and messages through the functions and structures of different words, phrases, clauses, sentences and paragraphs. In addition, the integration of language skills increases their communicative competence and prepares them for the academic and social challenges in college and beyond.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
EUTH400	Euthenics 1	1	0	0

This course focuses on the discussion of the policies and procedures that are intended to guide each member of UTB community in the performance of his/her role. This is used as a resourceful tool that orients the students with academic and non-academic policies of UTB. It contains the history, vision / mission and objectives of the institution, the services and academic support available.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MATH 401	College Algebra	3	0	3

This course is designed to familiarize learners with main theories, principles and concepts of college algebra that are useful in analysis and simplification of basic and some advanced mathematical problems. Content includes functions which are polynomial, rational, exponential, logarithmic and related equations. Sketching graphs, Matrices, determinants, progressions and inequalities as applied to engineering.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MATH402	Plane And Spherical Trigonometry	3	0	3

This course is designed to familiarize learners with main theories, principles and concepts of plane and spherical trigonometry that are useful in analysis and simplification of some advanced mathematical problems. The course covers topics on angles and their measurement, trigonometric/circular functions, inverse trigonometric functions, identities, graphs of trigonometric functions, solutions of trigonometric equations, solutions of right and oblique plane triangles, introduction to spherical trigonometry and its applications.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
CENG511	Computer Programming	2	2	3

This course covers problem solving and algorithm development, which emphasizes on developing good programming habits. It includes discussion of an overview of the Java language syntax, including classes, methods, variables, conditional statements, and control flow. The laboratory focuses on the implementation of the programming theories and concepts using Java.



COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGL402	ENGLISH COMMUNICATIONS SKILLS 2	3	0	3
<p>This is an intermediate course in English communication geared towards equipping the college students with writing skills in preparation for academic writing. It progresses from familiarizing the sentence conventions to balancing the structures of the sentence for variation and rhythm. Further, it enables students to follow the principles that govern the composition writing in achieving unity, coherence and emphasis; to improve their expository, descriptive, narrative and argumentative works and to get hold of the discipline in academic writing for future advantages by providing them the opportunity in adhering the process of writing for effective communication.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
EUTH401	Euthenics 2	1	0	0
<p>The course introduces the students to the guidelines on disciplinary actions as regards to violations of the rules and regulations of the University. The students will be taught on the general concepts and principles on values formation, attitudes and personality development. This course will encourage the students to participate in classroom discussion for them to better understand and appreciate acceptable social norms and conduct of an educated individual.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
HIST400	History Of Bahrain and GCC	3	0	3
<p>دراسة تاريخ مملكة البحرين ومنطقة الخليج العربي ويُظهر تعداد للاحداث الهامة في البحرين ومنطقة الخليج العربي وأثارها HIST400 يتناول مقرر على الوضع الراهن ، و يغطي الأهمية الاستراتيجية والمكانية للبحرين للبحرين بدءاً من الحضارات القديمة و مروراً إلى العهد الاسلامي، والاحتلال البرتغالي، وصراع القوى في القرن السابع عشر، وصعود قبيلة العتوب، والبحرين تحت الحماية البريطانية وابرام المعاهدات مع بريطانيا، وانسحاب القوات البريطانية من البحرين والخليج، ويتناول وصف الاماكن والشخصيات والتطورات التاريخية والانجازات في البحرين في عهد حكام البحرين، والبعد العربي والاسلامي في تكوين هوية البحرين ، الانضمام لمجلس التعاون الخليجي ، وتاريخ دول الخليج العربي (دول مجلس التعاون الخليجي)، ومع نهاية الكورس يكون الطالب قادر على تحليل الجذور التاريخية للبحرين لتكوين الهوية الوطنية ، والتمتع بمقدرة الاتصال الشفهي والكتابي والعمل بشكل منتج وفعال ضمن فريق واحد.</p> <p>This Course includes the history of the Kingdom of Bahrain and the Arabian Gulf region. It includes the important events in Bahrain and the Arabian Gulf region and their impact on the current situation. It covers the strategic importance of Bahrain, starting with "Ancient civilizations and passing through" the Islamic era, Bahrain's entry into Islam, Portuguese occupation, competition of powers in the 17th century and the rise of a tribe of Al-Atub. It includes the history of Bahrain under the British protection and the conventions between Bahrain and Great Britain up to British troops leaving the region. It describes the places and persons as well as the historical developments and achievement in Bahrain during the time of Al- Khalifa. It includes independence of Bahrain, issuing of the first constitutional law, reform project by His Majesty King Hamad, constitutional amendments, establishment of GCC, and history of Arab Gulf states. It makes the student able to present his patriotic character through historical discussions.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MATH406	Differential Calculus with Analytic Geometry	5	0	5
<p>This course is intended to develop practical skills in differential calculus and analytic geometry. Emphasis is placed on functions, limits and continuity, fundamental concepts of analytic geometry, explicit and implicit differentiation of algebraic and transcendental functions, conics, higher derivatives, polar coordinates and its applications (equations of tangent and normal lines, sketching polynomial curves, maxima and minima problems and time rates.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
SOCI400	Sociology	3	0	3
<p>This course is designed to expose students in a detailed approach of studying society. It intends to give emphasis on the sociological perspectives, relationships with other social sciences, the main figures in sociological development, including introduction to culture, transformation of societies, importance of socialization, social groups, deviance and social control. Further, it integrates the discussions on social institutions that enable the college students to understand the economic perspective from ancient to present, the evolution of education and the current viewpoint of family.</p>				



COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
CENG523	Advanced Programming	2	2	3
This course enables students to understand and develop Java applications. Topics include arrays, recursion, exception handling, inheritance and polymorphism, file handling, basic applets, strings, GUI and Java events. The laboratory focuses on the development of programs in Java. It starts from the concepts of arrays and progresses from exception handling to Basic Applets.				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGL403	Speech and Oral Communication	2	2	3
This is a developmental course in English communication geared towards competent, efficient and effective interpersonal speaking across communicative contexts. It refines the oral communication skills of the college students through accurate articulation of segmental phonemes, pronunciation drills and enunciation of the suprasegmental features of speech, specifically sentential stress and intonation. Further, it incorporates the mechanics and techniques of speech craft and delivery with emphases on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MATH501	Integral Calculus with Differential Equations	5	0	5
This course provides the students with knowledge and understanding of core concepts, theories and principles in evaluating definite and indefinite integrals and its applications in solving engineering and computing problems. The course also covers solutions to ordinary differential equations which can be used in modeling important applications in the scientific and engineering fields.				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
PHYS501	University Physics 1	2	2	3
This course is designed to explore the concepts of motion using vectors and other mathematical models and their advanced application, such as the application of Newton's laws of motion, projectile motion, work, energy, momentum and impulse, rotational dynamics, equilibrium of a rigid body, and periodic motion.				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
SCIE400	Biology	2	2	3
This course focuses on the detailed knowledge and understanding of the fundamental life processes and functions of living systems including the nature of knowledge relating to cell structure, function and metabolism, bioenergetics, genetics and biotechnology, cellular reproduction and cell division, evolution, biodiversity, and ecology. The students will demonstrate the importance between explanations based on evidence through inquiry-based laboratory activities to provide insight into scientific method.				
COURSE CODE	Course Title	LEC HRS	LAB HRS	UNITS
ENVS400	Environmental Science	3	0	3
This course is an introduction to environmental science. It examines the ecological foundation of environmental systems; the ecological impacts of population growth and environmental degradation by humans and the strategies for sustainable management of environment and natural resources; mineral resource extraction; water resource use and water pollution; air pollution and climate change; and the conventional and sustainable energy supply.				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGL502	Technical Writing	3	0	3
This is an advanced course in English academic writing designed to deal with the application of the technical writing principles with the correspondence on business, science, and technology. It aims to develop the technical writing skills and communication of the college students thru the discussions of its elements and ethics with the use of digital technologies. Furthermore, it enables students to adapt the various communication routes in the workplace, to conceptualize suitable contents of technical writing, to understand the characteristics and other methods of communication techniques, to plan and organize advanced level tasks and to work effectively and with accountability with other team members in a creative and productive manner, in any language learning scenario when achieving personal and group outcomes.				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG410A	Engineering Drawing	2	2	3
The course covers the application of Computer-Aided Drafting Design (CADD) in sketching and drawing to produce engineering drawings. The student will learn the appropriate AutoCAD drawing and modifying commands to generate 2D drawings and orthogonal projections of 3D drawings. In addition, the course will cover editing,				



modifying and plotting 2D and 3D drawings.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG520	ENGINEERING MATERIALS	3	0	3

This course deals with Engineering materials deals with the study the core principle and concept of engineering material science. It covers the defining features of properties and structure of different engineering materials. It discusses the classifications of materials such as metals, polymers, ceramics, and composites. It also covers the formation of bonds and forces between particles, amorphous and crystalline structure, the impact factor, solid solutions and phase diagram, and defects in crystalline materials. It also covers the analysis of the physical, mechanical, electrical and magnetic properties of materials. This also emphasizes the various considerations in selecting materials appropriate for a particular application.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MATH503	Discrete Mathematics	3	0	3

This course introduces the basic concepts and techniques of discrete mathematics. The course includes the discussion of mathematical logic, propositions, quantifiers, predicates, proof techniques, mathematical induction, fundamentals of set theory, sets, power sets, algebra of sets, relations, functions, countability and finiteness, graphs and trees.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
PHYS502	University Physics 2	2	2	3

This course is designed to explore the concepts of electricity and magnetism using the concepts of mechanics, vectors, and other mathematical models and their advanced application, such as application of Coulomb's law, Gauss's law, Ohm's law, Kirchhoff's laws, electric potential and potential difference, basic circuits, series and parallel circuits and combinations, magnetic field and flux, induced EMF and applications such as electric motors and basic AC electric generators.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG531	Electric Circuit Theory 1	2	2	3

The Course deals with the study of core theories, principles, and concepts for analysis of DC networks through the application of basic laws and network theorems. It covers the inter relationship between the parameters of DC circuits, critical analysis of complex circuits excited by DC voltages and current sources through basic circuit laws - KVL and KCL and structured methods and theorems like nodal analysis, Mesh analysis, superposition, Maximum power transfer & Millman's theorem.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG532	Thermodynamics	3	0	3

Thermodynamics deals with the study associated with details of the properties of the pure substance to adept the necessary process related to energy concepts, ideal gas laws, work and heat, processes of ideal gases, and gas and steam cycles. It also includes a critical evaluation of various laws and its practical applications of thermodynamic principles in power plan.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
HUMR400	Human Rights	3	0	3

يتناول هذا المقرر تمكين الطالب و جعله قادرا على معرفة الخلفية التاريخية لحقوق الإنسان، المفاهيم و الاصول الفلسفية و الرؤيا الاسلامية لحقوق الانسان كما يتناول بالعرض و التحليل مصادر حقوق الإنسان كإعلان العالمي لحقوق الإنسان، و العهد الدولي الخاص بالحقوق المدنية و السياسية و العهد الدولي الخاص بالحقوق الاقتصادية و الإجتماعية و الثقافية و الوثائق الدولية الأخرى ذات الصلة بحقوق الإنسان ماورد فيها من الحقوق و التمييز بينها. كما يتناول بالمقاربة ذاتها ما ورد في الوثائق الوطنية مثل دستور مملكة البحرين و الميثاق الوطني و كيفية تطبيقها. و يُمكن الطلبة من مهارات تحليل و تفسير و نقد التطبيقات و التجاوزات فضلا عن القدرة على التحليل و التواصل و عرض مسائل حقوق الإنسان بمختلف الوسائل.

This course makes the students able to know the background, main concepts of Human Rights and the philosophical thoughts and Islamic view which contribute to modern Human Rights. It makes them able to analyze what is mentioned in different kinds of Human Rights sources as Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and International Covenant on Economic, Social and Cultural Rights. It deals in the same approach with the National Sources of Human Rights such as the Constitutional Law of Kingdom of Bahrain and National Action Charter with applications as well. The course makes the students able to analyze, discuss and debate Human Rights issues in different ways.



COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MATH409	Probability and Statistics	3	0	3
<p>This course provides a demonstration of the main concepts of probability and statistics with applications. IT also covers identifying the theorem of probability and linked with real life problems. How to differentiate between the combination and permutation; Explain how to find the mean and variance from the moment generating function. Explain and interpret the findings from different hypothesis tests for decision making. Finally, SPSS will be used to run the statistical measures (e.g. hypothesis tests and regression model)</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MATH502	Advanced Mathematics	2	2	3
<p>This course deals with the study of complex numbers, series solutions of ordinary differential equations by power series, Bessel Function, Frobenius method. Basics of Fourier series, Fourier transform, Laplace and inverse Laplace Transforms. Using MATLAB or other mathematical software in order to solve mathematical problems.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
PHYS503	University Physics 3	2	2	3
<p>This course is designed to explore the concepts of heat and thermodynamics, waves and optics, relativity, molecular, atomic, and nuclear physics using the concepts of mechanics, electricity and magnetism, vectors, and other mathematical models and their advanced application, such as the application of the laws of thermodynamics, light and electromagnetic waves, Einstein's special theory of relativity, Planck's Quantum theory, de Broglie's waves, Heisenberg's Uncertainty Principle, Dirac's electron theory, Hund's Rule, and atomic models from Thompson's to Quantum Mechanical, as well as nuclear models.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG521	Engineering Mechanics	3	0	3
<p>This course deals with the core theories, principles and concepts of force systems, force components, free body diagrams, vectors, resultant of force systems, moment of forces, and equilibrium of rigid bodies, It also includes critical analysis of structures, methods of analysis of trusses, and, distributed forces centroids and center of gravity, and the theory and application of friction.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG522	Engineering Economy	3	0	3
<p>This course deals with the advanced study of the core theories, principles and concepts of economic environment, interest and money-time relationship, depreciation, capital financing, comparing alternatives, replacement studies, break-even analysis, benefit cost ratio, and benefit cost difference. It presents mathematical techniques and practical advice for evaluating decisions in the design and operation of engineering systems.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG534	Electronics 1	2	2	3
<p>Fundamentals of semiconductors, PN junction diode, Analysis, application and design of diode circuits, Zener diode characteristics and applications, special purpose diodes. Fundamentals of Bipolar junction transistor (BJT), characteristic; amplifier types CE, CC and CB, dc analysis and switch circuit analysis; different biasing, Multistage Amplifiers, Differential Amplifier and CMRR.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG611	Electric Circuit Theory 2	2	2	3
<p>This course deals with core theories, principles, and concepts of the topics of sinusoidal voltage and current on RLC circuits, vector algebra and its application to AC circuit analysis, sinusoidal and non- sinusoidal single-phase system, and three phase systems. It also covers reactance, impedance, resonance, power in AC circuits, power factor correction and impedance network. The course evaluates the theorems which include Kirchoff's laws, Mesh, Superposition, Nodal Analysis, Thevenin's, Norton, and Maximum power transfer.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MATH504	Multivariate Calculus	2	2	3
<p>This is the third part of the course in calculus focused on vector and multi-variable calculus. Topics associated with the course demonstrate advanced knowledge and understanding of the following: vectors and vector operators, calculus of functions of several variables including partial differentiation and multiple integrals, Lagrange</p>				



multipliers, applications of partial differentiation, line integrals, green's theorem, Stoke's theorem, and Divergence theorem. The course also includes laboratory components that make use of MATLAB as tool in solving problems in Multivariate Calculus.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MATH505	Numerical Methods and Analysis	2	2	3

This course demonstrates critical knowledge and understanding of specialist theories, principles and concepts of the study of numerical approximations and errors, numerical solutions of non-linear equations, interpolation and curve fittings, numerical differentiation and integration. The course also covers analysis of accuracy of numerical differentiation and integration methods and solution of initial value problems using Euler Method. Analysis of accuracy of Euler's method. The course also includes laboratory components that make use of MATLAB as tool in solving problems in Numerical Analysis.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
CENG611	Data Communication and Networking 1	2	2	3

This course provides discussion of data communications and networking. It includes a detailed discussion of the different network models, concepts that have direct effect on the efficiency of a network, network technologies, distributed computation, networking, communication software, and security issues.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG535	Fluid Mechanics	3	0	3

Fluid Mechanics deals with the study associated with details of the properties of the fluid and gas to adept the necessary Knowledge related to fluid power concepts such as the fluid properties of compressible and incompressible fluids which include viscosity, Density, bulk modulus and compressibility. The topics covered are Fluid Statics; fluid mechanics fundamentals, including concepts of mass and momentum Integral relations for control volume: Bernoulli, energy and momentum equations. Flow in pipes; laminar and turbulent flow, Reynolds number and Moody chart, laminar and turbulent boundary layer fundamentals. The learning approach is to apply engineering principles to performance analysis and prediction of simple fluid systems such as hydraulics and pneumatics.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG613	Electronics 2	2	2	3

This is an advanced course in electronics which deals with concept, analysis and design of electronic circuits using linear and integrated devices. In this course include AC and DC analysis, principles and concepts of frequency response of BJT amplifier and further extends the study to multistage amplifier and various FET. The other topics include study and critical analysis of Operational Amplifier, its application, Feedback topologies & explore NE555 Timer and its applications.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG615	Electromagnetics and Electrical Machines	3	0	3

This course examines the core theory, characteristics, construction operation and application of static and rotating electrical machines. It includes the detailed study and analysis of direct current motors, direct current generators, AC Machines, special machines etc. The course offers a detailed understanding of the application of electromagnetic machines in the field of industry.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG627	Logic Circuit, Switching Theory and Programmable Logic Devices	3	2	4

The course deals with the concepts of digital design and digital circuits. It covers the study of number systems, basic logic gates, Boolean algebra, simplification of logic functions, Karnaugh maps, NAND and NOR gates, multiple output networks. MSI combinational logic circuits, combinational logic circuits design with programmable logic devices.



COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MATH506	Linear Algebra	2	2	3
<p>This course use specialist level skills to relate to and adapt main and core theories and concepts in the study of matrices and determinants, and their applications in numerical solutions of systems of linear equations. It also includes important topics such as linear transformations, eigenvalues and eigenvectors, complex vectors and matrices and numerical linear algebra. In the laboratory, MATLAB is use as mathematical software and solutions to a variety of mathematical problems are determined.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG501	Safety Engineering	2	0	2
<p>This course deals with the study of the foundations of safety engineering and applications of safety principles to industrial and commercial systems. It covers topics concerning safety management, occupational health, fire prevention and control, electrical safety, and environmental safety. Further, students will learn how to conduct risk analysis and some of the mitigation measures.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG533	Strength of Materials	3	0	3
<p>Strength of Materials deals with the study of the relationship between externally applied loads and their internal effects on bodies. It covers analysis of the different stresses such as normal, flexural, shear and bearing stress. It also deals with the Hooke's Law analysis, axial deformation, torsion, twisting angles, helical springs, and thin-walled cylinders as well as analysis of shear and moment in beams</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH610	Pneumatics & Electro-Pneumatics	2	2	3
<p>This course introduces the student to the knowledge base and technical skills related to industrial pneumatic and electro-pneumatic systems. Areas of study include pneumatic principles, Symbols and standards in pneumatics, components of a pneumatic system, display of motion sequences and switch states, set-up controls with relays, electrical self-latching switches, memory circuit and speed control of a cylinder, design of electro-pneumatic system, representation of motion sequences and operating status, and practical application.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG614	Control Systems	2	2	3
<p>The course deals with the study of the concepts of control systems. It covers also the discussion of the mechanical and electrical modeling using conventional differential equations, reduction rules applied to block-diagram of linear control systems and signal flow graph. Laplace and Inverse Laplace Transformations. Discussion of time-domain response of first and second order control systems, steady-state errors, Routh-Hurwitz Criterion for stability, root locus method, frequency response (bode diagram and polar plot), Nyquist stability criterion, and compensator design techniques. MATLAB is used for analyzing and simulating control systems.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH631A	Power Electronics	3	2	4
<p>This course covers the power electronics semiconductor switches, Thruster, Triac, GTO and advanced types of power transistor. Triggering devices: UJT, DIAC, and PUT. Types of power conversion: single phase and three phase uncontrolled and controlled rectifiers and their performance. AC voltage regulator, inverters single phase and three phase with PWM techniques.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH633	Introduction To Fuzzy/Neural System	3	2	4
<p>This course deals with the core concepts and theories of Artificial Neural Networks (ANN), Perceptron networks, training methodology, and typical application to linearly separable problems, Fuzzy systems, training methods and implementation of ANN and Fuzzy systems for complex industrial applications. Students will also learn to utilize more advanced tools, features, and training methods in implementing intelligent control system. Higher level software programming will be used for critically analyzing, evaluating, and synthesizing the implemented fuzzy logic and neural networks systems.</p>				



COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MATH507	Optimization Methods	3	0	3
The course takes a unified view of optimization and covers the main areas of application of core optimization algorithms. The topics include linear optimization, robust optimization, network flows, dynamic optimization and non-linear optimization.				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH621	Linear Systems	2	2	3
This course deals with details knowledge and understanding of theories for linear systems. This module develops a detailed understanding of the fundamentals of linear systems analysis and design using the state space approach. Topics covered include state space representation of systems; solution of state equations; stability analysis using Lyapunov methods; controllability and observability; linear state feedback design; and state observer. MATLAB is used for analyzing and simulating Linear systems.				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH623	Hydraulics & Electro-Hydraulics	3	2	4
This course deals with the core concepts and physical principles of hydraulics, circuit symbols and components of a hydraulic and Electro-Hydraulics system. It also covers the study of the components of the power supply, Hydraulic Power Generation, control valves, actuators and accessories, and the extended cylinders. Students will also learn to design and implement hydraulic and electro-hydraulic system for complex industrial applications. students will critically analyze, evaluate and synthesize the Electrical circuit Design including electrical components and memory Circuit, Time lag relays, Pressure Control, Speed control valve. Hands-on simulation on advanced industrial applications related to hydraulics and electro hydraulics is conducted for the students using the Festo hydraulics modules.				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH624	Programmable Logic Controllers	3	2	4
The course deals with core concepts and theories of the hardware and software of Programmable logic controllers. This course also deals with programming, connecting, and testing Programmable Logic Controllers (PLCs) for control of complex industrial/commercial processes. It covers, sensor interfacing, application of PLCs in some specific Industrial process, and utilization of a hand-held programmer in troubleshooting PLCs. Hands-on simulation is conducted for the students to understand the critical PLC implementation process in industry using advanced tools such as Festo PLC modules and CodeSys software.				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH641	Process Instrumentation and Control	3	2	4
This course deals with the core concepts and theories of industrial process control and the instrumentation used for it. It elaborates various sensors used in process industry and special emphasis is given on measurement sensors such as Pressure transmitter, Ultrasonic sensors, thermistors and proportional valves. Students will learn the working principle, specifications, design and selection aspects used for sensing complex process parameters, along with merits and limitations of each type of sensor. The course will also build the detailed knowledge to the participants on working principles of control loop components, control strategies, and PID controller fundamentals including terminology, algorithms and advanced methods. A special emphasis on real life implementations, case studies and international standards would ensure students to critically analyze, evaluate and synthesize with their day-to-day practice.				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG639	Professional Ethics and Engineering Laws	3	0	3
This course covers topics in the core theories and concepts of ethics, law, contracts, intellectual property, the responsible engineer, moral thinking, risk/safety/liability, employer responsibilities, product liability, and environmental responsibilities. The course deals with several case studies of ethical problems in engineering. It discusses the core concepts of environmental protection and sustainability to understand how they relate to engineering ethics. The course is intended to promote greater reflection by engineers on their activities to better understand the social dimensions of engineering practice. It also provides a historical perspective on society's environmental concerns, and discusses environmental statutes, our regulatory system, approaches to preventing and mitigating environmental problems, and the elements of an effective environmental management system.				



COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH639	Microcontroller	2	2	3
<p>This course provides critical knowledge and understanding of microcontroller-based systems design, development, and implementation. It includes embedded system types, microcontroller architecture, programming, digital and analog I/O interfacing, task scheduling, interrupt and timers management, and communication interfaces. Through laboratory and in-course project, the students will creatively implement complex applications of microcontroller-based systems.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH642	Machine Vision	3	2	4
<p>This course discusses about core theories, principles and concepts of machine vision devices and techniques and also learns about computer vision systems and digital image processing. It also relate to fundamental issues and techniques of computer vision and image processing. Emphasis will be on physical, mathematical, image-processing, pattern recognition, and feature extraction aspects of vision. The course will have a proper Lab activity to enable students understand the breadth and depth of the lecturing materials. The main topics that will be as: Machine vision concepts, Image acquisition, Lighting, Image formation, Image conversion, Image processing and analysis. Image enhancement, Edge detection and Image segmentation.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH643	Robot Kinematics, Dynamics and Control	3	2	4
<p>This course facilitates the core learning and understanding of robot manipulators for students to understand complex design and applications of robots in industrial application. Successful completion allows student to formulate the kinematics and dynamic modelling of robotic manipulators consisting of a serial chain of rigid bodies and to implement control algorithms with sensory feedback during the lab sessions. Students will gain specialist skills in dealing with complex control architecture and manipulator structure typical to new-generation robots.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH644	Modular Production System	3	2	4
<p>This course integrates core theories of mechanical design, computer control and electronic components in designing an Industrial automation system. Students will be provided with the detailed knowledge and understanding on various automation strategies, automation layouts, material handling devices used in assembly lines, automated assembly lines and computer integrated manufacturing. It discusses the step-by-step manner of designing, assembling, and programming a modular station based on the given system requirement. The laboratory uses Codesys software for PLC programming and advanced FESTO educational modules in simulating processes in the modular production system.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
ENGG638	Engineering and Project Management	3	0	3
<p>This course provides critical knowledge and understanding of project management and the essential tools needed to deliver successful projects on time and on budget from the standpoint of the manager, who must skillfully organize, plan, implement and control non-routine activities to achieve schedule, budget and performance activities. Topics include project life cycles, principles and concepts of strategic management process in project selection and organization, planning, budgeting and scheduling systems. It also covers planning and control methods such as PERT- CPM, Gantt Charts, earned value techniques, project audits, and risk management to critically evaluate various project management situations.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH651	Industrial Attachment	0	6	6
<p>This 6-unit course is the practicum course where the students are exposed to actual work environment. The students are required to complete 240 hours of on-site training. They are sent to work environments under the supervision of a practicum professor. Moreover, the students submit a report and a performance evaluation made by the on- site supervisor.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH652	Mechatronics Engineering Design Project A	0	6	3
<p>This is the first of two courses in Mechatronics Engineering design sequence which prepares students for engineering practice through a culminating major design experience or capstone based on the knowledge and</p>				



skills acquired in foundation and core courses and incorporating appropriate engineering standards (IEEE, ISO) as an integral part and with due consideration of multiple realistic constraints tradeoffs. This is a group supervised design project in which students analyze, specify, design, construct, evaluate and adapt physical computing in various applications such as in smart environments and embedded systems. They also incorporate design standards and make decision as a result of multiple design tradeoff/constraints (economics, environmental, social, political, ethical, health and safety, manufacturability, and sustainability) analysis and evaluation as part of the design process.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH645	Technopreneurship	3	0	3

The course deals with the study of entrepreneurship in IT industry by applying the core theories and principles of entrepreneurship and management in IT business. The course covers types of entrepreneurship, legal factors related to the project like Business act, company act, technology act and Industrial act, developing a Business plan by integrating business proposal writing skill, software skills, innovation and creativity skills. It also covers advanced level topics like risk management, configuration management and quality management.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH661	Mechatronics Engineering Design Project B	0	6	3

This course is a continuation of Mechatronics Engineering Design A (MECH652) which enables students to design a system, component, or process to meet desired needs within realistic constraints through a culminating major design experience or capstone based on the knowledge and skills acquired in foundation and core courses and incorporating appropriate engineering standards (IEEE, ISO) as an integral part and with due consideration of multiple realistic constraints tradeoffs. This is a group supervised design project in which students analyze, specify, design, construct, evaluate and adapt physical computing application in smart environments and embedded systems. They also incorporate design standards and make decisions as a result of multiple design tradeoff/constraints (economics, environmental, social, political, ethical, health and safety, manufacturability, and sustainability) analysis and evaluation as part of the design process.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH653A	Data Communication and Networking 2	2	2	3

This course provides an in-depth and advanced discussion of routing technology. It integrates the core theories, concepts, functions, and operations of a router including the principles and applications of routing protocols. Topics include router components and configuration; Unicast and Multicast routing protocols: RIPv1, RIPv2, EIGRP, OSPF and BGP; VLSM and IPv6. The students make use of a range of approaches including the Packet Tracer, GNS3 and the actual network devices in the laboratory in performing advanced and complex network configurations using the different routing protocols and in the critical analysis of network requirements, issues and/or problems.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH653D	Digital Control Systems	2	2	3

Introduction to Digital Control, Discrete-Time Systems ( Difference equations, The z-transform, z-Transform solution of difference equations, The time response of a discrete-time system, The modified z-transform, The sampling theorem), Modeling of Digital Control Systems, Stability of Digital Control Systems, Digital Control System Design ( z-Domain root locus, Digital implementation of analog controller design, Direct z-domain digital controller design, Frequency response design, Direct control design), Discrete-time State-Space Representation, The solution of linear state-space equations, The transfer function matrix, Stability of state-space realizations, Controllability and stabilizability, Observability and detectability, Detectability, State-space realizations, State Feedback Control, Pole placement, State estimation, Observer state feedback, Optimal control, The linear quadratic regulator.

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH653C	System Modeling and Simulation	2	2	3

This course examines core theories and principles of engineering system modeling and simulation methods, as well as numerical and computer-based solution techniques utilized in industrial and engineering environments. Techniques for finding solutions to these systems include: graphical, algebraic, numerical, state space, simulation and computational processes. Case studies in industry and engineering applications are used to illustrate the techniques and modeling concepts. Examples of simulation and analysis methods will be related to the linear and non-linear, deterministic and non-deterministic systems.



COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH662A	Wireless Communications	2	2	3
<p>This course aims to develop the core knowledge of communications theories and their applications in digital communications. The course covers the structure of the digital communication systems, analog modulation technique, digital modulation techniques, probability of error in digital communication system, multiple access techniques, channels and source encoding, mobile communication systems.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH662D	Power Plant	2	2	3
<p>The course deals with the major systems and components practice related to power plant to generate electrical power such as Boiler, Turbine, Condenser and pumps. The topics covered are: thermodynamic cycles; ranking cycle modified Rankin cycle with re-heater and feed water heater, also steam, gas and combined cycle power plant are covered. This course required the student to integrate all these topics to analyze and design the deferent type of power plant systems and components.</p>				
COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	UNITS
MECH662C	Digital Signal Processing	2	2	3
<p>The course deals with the detailed study of the core theories, principles and concepts of digital signal processing; discrete convolution; Z-transform; sampled data system; digital filters; discrete Fourier transforms; fast Fourier transforms. DSP Applications. Introduction of 2-D signal (image) processing. This course is designed to provide students with a comprehensive treatment of the important issues in design, implementation and applications of digital signal processing theory and algorithm. Further, computer simulation exercises are intended to familiarize the student with implementation aspects and the application of theoretical knowledge to practical problems.</p>				



<b>1. Teaching Institution</b>	University of Technology Bahrain
<b>2. University Department</b>	College of Engineering
<b>3. Program Title</b>	Bachelor of Science in Environmental Engineering
<b>4. Title of Final Award</b>	Bachelor of Science in Environmental Engineering
<b>5. Modes of Attendance offered</b>	Actual classroom learning-interactive
<b>6. National Qualification Framework Level and Credit</b>	NQF Level 8 612 Credits (204 ACS Credits)
<b>7. Accreditation</b>	
<b>8. Other external influences</b>	<p><b>Local External Influences/References</b> Ministry of Education (MOE), Higher Education Council (HEC) Bahrain Quality Authority for Education and Training (BQA)</p> <p><b>International External Influences/References</b> Accreditation Board for Engineering and Technology (ABET) American Association of Environmental Engineers (AAEE)</p>
<b>9. Date of production/revision of this specification</b>	April 2021

**10. Aims of the Program**

The Bachelor of Science in Environmental Engineering (BSEnE) Programme at UTB is concerned with the synergy that governs the interrelationships of man and nature along with the processes that impacts the balance of our desire to achieve sustainable growth while maintaining desirable environmental quality. The discipline covers areas of mathematics, basic sciences (physical, chemical and biological), engineering design and analysis, and environment management and regulations necessary to address complex environmental engineering problems. The programme includes a work-based learning course in a form of practicum and all students must undertake a design course as a form of capstone project that requires application of environmental engineering principles to real-world problem. For achieving additional depth in specific areas of environmental engineering, technical elective courses are available in a range of topics including in-situ waste site remediation, computer modeling, and use of natural systems for wastewater treatment, and special topics and design/research project courses.

The program aims to produce graduates of the environmental engineering who shall

1. Possess the technical and professional skills needed to ensure that they are adequately prepared to enter and progress professionally in the practice of environmental engineering or progress academically in advanced areas of study;
2. Be proficient in the fundamentals of mathematics and statistics, computational methods, natural

- and physical sciences, and chemical and environmental engineering sciences necessary to communicate and collaborate effectively with a broad spectrum of environmental professionals
3. Have the ability to perform engineering analysis and design of water, air, and land treatment/protection systems that minimize risk to the environment and public health.

Programme Educational Objectives (PEOs):

Graduates of the programme, three (3) to five (5) years after graduation shall be able to:

- PEO1. Pursue careers in Environmental Engineering or related fields towards the improvement of engineering practice.
- PEO2. Engage in lifelong learning towards completion of advanced/continuing education/industrial training or other learning opportunities.
- PEO3. Demonstrate professional success via promotions and/or positions of increasing responsibility.

### **11. Learning Outcomes, Teaching, Learning and Assessment Methods**

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
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 objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

### **Teaching and Learning Methods**

- a. Constructive Method. Learners must be fully engaged and active in the process of constructing meaning and knowledge based on their prior knowledge and experiences through the process of doing, making, writing, designing, creating and solving. It allows teachers to implement differentiated learning, authentic assessment practices and incorporate technologies to improve individual learning experiences. It includes simulations, in-course projects, field trips, digital content, group discussions and reflections. This method strives to improve achievement by consciously developing learners' ability to consider ideas, analyze perspectives, solve problems and make decisions on their own thereby making them more responsible and independent.
- b. Inquiry based Method. Learners develop cognitive skills like critical thinking and problem solving by working on questions, problems, or scenarios and formulate creative solutions. The teachers use structured, guided or open inquiry to facilitate learning. As a process, learners are involved in their learning by formulating questions, investigating, building their understanding and creating meaning and new knowledge on a certain lesson. Typically activities include laboratory sessions and research-based activities.
- c. Collaborative Method. Learners are divided into small groups to learn something together and



capitalize on one's other resources and skills, evaluating one another ideas, and monitoring one another's work. It allows students to actively interact by sharing experiences and take on different roles. Typically, students are provided with problems or projects that they work on together to search for understanding, meaning, or solutions and each group is expected to work together developing or formulating solutions and present the solution in class. The activities include think-pair-share, jigsaw, or round-robin which effectively engage students to complete the tasks.

- d. Experiential learning method is the process of learning by doing. By engaging students to hands on experience which attempts to apply theories and knowledge learned in the classroom to real-world situations. This may include team challenges, simulations, company visits/fieldworks and other extracurricular activities. Experiential learning opportunities exist in a variety of course- and non-course-based forms and may include community service, service-learning, undergraduate research, study abroad, and culminating experiences such as internships, student teaching, and capstone projects.

Assessment is through a combination of written examinations (essays, class tests, homework) and assessed coursework (problem sets, laboratory exercises and machine problems)

## 12. Programme Structure

### BACHELOR OF SCIENCE IN ENVIRONMENTAL ENGINEERING CURRICULUM PLAN EFFECTIVE SY2022-2023

#### REMEDIAL CLASSES

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
ENGL501	Speaking and Listening	9	0	0	-
ENGL502	Grammar and Vocabulary	9	0	0	-
MATH500	Remedial Mathematics	3	0	0	-
<b>Total Units</b>				<b>0</b>	

#### FIRST YEAR – FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
MATH611	College Algebra	3	0	3	-
ENGG601	Engineering Drawing	2	2	3	-
CHEM611	General Chemistry 1	2	2	3	-
ENGL611	English Communication Skills 1	3	0	3	-
CSCI611A	Introduction to Computing	2	2	3	-
SOCI600	Sociology	3	0	3	-
EUTH400	Euthenics 1	1	0	0	-
<b>Total Units</b>				<b>18</b>	



**FIRST YEAR – SECOND TRIMESTER**

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
MATH612	Plane and Spherical Trigonometry	3	0	3	-
SCIE611	Biology	2	2	3	-
CHEM621	Inorganic Chemistry	2	2	3	CHEM611
ENGL621	English Communication Skills 2	3	0	3	ENGL611
ARAB600	Arabic Language	3	0	3	-
CENG621	Computer Programming 1	2	2	3	CENG611
EUTH401	Euthenics 2	1	0	0	EUTH400
<b>Total Units</b>				<b>18</b>	

**FIRST YEAR – THIRD TRIMESTER**

CourseCode	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
MATH631	Differential Calculus with Analytic Geometry	5	0	5	MATH611, MATH612
ENGL631	Speech and Oral Communication	2	2	3	ENGL621
CHEM631	Organic Chemistry	3	2	4	CHEM621
ENVE611	Elementary Surveying	2	2	3	MATH622
HIST600	History of Bahrain and GCC Region	3	0	3	-
<b>Total Units</b>				<b>18</b>	

**SECOND YEAR – FIRST TRIMESTER**

Course Code	Course Title	LecHrs	Lab Hrs	Credit Units	Prerequisites
HUMR600	Human Rights	3	0	3	SOCI600
CHEM711	Analytical Chemistry	3	2	4	CHEM631
MATH711	Integral Calculus with Differential Equations	5	0	5	MATH631
ENGL711	Technical Writing	3	0	3	ENGL621
PHYS711	University Physics 1	2	2	3	MATH631
<b>Total Units</b>				<b>18</b>	



**SECOND YEAR –SECOND TRIMESTER**

Course Code	Course Title	LecHrs	Lab Hrs	Credit Units	Prerequisites
MATH621	Probability and Statistics	3	0	3	MATH631
ENGG721	Thermodynamics	3	0	3	PHYS711
CHEM722	Environmental Biochemistry	2	2	3	SCIE611
ENGG722	Engineering Economy	3	0	3	MATH611
PHYS722	University Physics 2	2	2	3	PHYS711
ENVE721	Fundamentals of Environmental Engineering	3	0	3	SCIE611
<b>Total Units</b>				<b>18</b>	

**SECOND YEAR –THIRD TRIMESTER**

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
MATH721	Linear Algebra	2	2	3	MATH711
CHEM723	Physical Chemistry	2	2	3	CHEM711
ENGG723	Safety Engineering	2	0	2	-
ENVE722	Unit Operation: Fluid Mechanics	2	2	3	ENGG721
SCIE723	Environmental Microbiology	2	2	3	SCIE611
ENGG724	Engineering Mechanics	3	0	3	PHYS711
<b>Total Units</b>				<b>17</b>	

**THIRD YEAR –FIRST TRIMESTER**

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
CHEM811	Water Chemistry	2	2	3	CHEM722
MATH722	Advanced Mathematics	2	2	3	MATH711
ENGG811	Engineering Materials	3	0	3	CHEM611
ENVE811	Unit Operation: Heat Transfer	2	2	3	ENGG721
ENGG811	Professional Ethics in Engineering Education	1	0	1	-
CHEM811	Atmospheric Chemistry	3	0	3	CHEM631
<b>Total Units</b>				<b>16</b>	



**THIRD YEAR –SECOND TRIMESTER**

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
ENVE821	Water Resources Engineering	3	0	3	CHEM811
ENVE822	Instrumentation and Control	2	2	3	CHEM711
ENVE823	Unit Operation: Mass Transfer	2	2	3	ENVE811
MATH732	Numerical Methods and Analysis	2	2	3	MATH722
ENVE824	Air Pollution and Prevention	3	0	3	ENVE721
ENVE825	ENVE Unit Operation: Physical and Chemical Treatment	2	2	3	ENVE722
<b>Total Units</b>				<b>18</b>	

**THIRD YEAR –THIRD TRIMESTER**

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
ENVE831	Air Quality Engineering	3	0	3	ENVE824
ENVE832	Soil Engineering	3	0	3	ENVE821
ENVE833	Environmental Engineering Laws and Regulations	3	0	3	ENVE722
ENVE834	Environmental Quality Systems Engineering	3	0	3	ENVE721
ENVE835	ENVE Unit Operation: Biological Treatment	2	2	3	SCIE723
ENVE836	Technopreneurship	3	0	3	ENGG722
<b>Total Units</b>				<b>18</b>	

**FOURTH YEAR –FIRST TRIMESTER**

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
ENVE837	Methods of Research with Inferential Statistics	3	0	3	MATH722
ENVE838	Project and Engineering Management (Risk Analysis)	3	0	3	ENGG722
ENVE839	Engineering Hydrology	3	0	3	ENVE821
ENVE840	Oil and Gas Technology 1	3	0	3	ENVE821
ENVE8XX	Elective 1	2	2	3	ENVE834
ENVE8XX	Elective 2	2	2	3	ENVE834
<b>Total Units</b>				<b>18</b>	



#### FOURTH YEAR – SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
ENVE8XX	Elective 3	2	2	3	ENVE834
ENVE841	Environmental Planning and Design	3	0	3	ENVE834
ENVE842	Industrial Attachment	0	12	6	4 <sup>th</sup> year
ENVE843	Environmental Engineering Project Design A	3	0	3	ENVE838
<b>Total Units</b>				<b>15</b>	

#### FOURTH YEAR – THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
ENVE844	Wastewater Engineering	3	0	3	ENVE835
ENVE845	Oil and Gas Technology 2	3	0	3	ENVE840
ENVE846	Environmental Impact Assessment	3	0	3	ENVE834
ENVE847	Environmental Engineering Project Design B	3	0	3	ENVE834
<b>Total Units</b>				<b>12</b>	
<b>Grand Total</b>				<b>204 Credit Units</b>	

#### TECHNICAL ELECTIVES

Course Code	Course Title	Units
ENVE6XX (848)	Renewable Energy	3
ENVE6XX (849)	Climate and Global Warming	3
ENVE6XX (850)	Remote Sensing	3
ENVE6XX (851)	Hazardous Waste Management and Remediation	3
ENVE6XX (852)	Introduction to GIS	3
ENVE6XX (853)	Advanced Topics in Environmental Engineering	3
<b>Total</b>		<b>9</b>

#### 13. Awards and Credits

<b>Degree/ Certificate Awarded</b>	Bachelor of Science in Environmental Engineering
<b>Total Units for Degree</b>	204
<b>Total Trimesters Completed</b>	12

#### 14. Personal Development Planning

1. Conduct in-house trainings and seminars related to all functional areas of environmental engineering, and the current trends and updates in the environmental engineering industry;
2. Send faculty members to local and international conferences, seminars and trainings related to their fields of specialization;
3. Support faculty members to conduct research projects aligned to college research thrusts and priorities;
4. Establish partnerships and linkages where research collaborations can be made; and
5. Encourage research publication and dissemination through participation in international research conferences and fora.



18. BSEnE CURRICULUM SKILLS MAPPING										
Year / Level	Course Code	Course Title	Core (C) or Option (O)	Programme Intended Learning Outcomes / Student Outcomes						
				SO1	SO2	SO3	SO4	SO5	SO6	SO7
Year 1 1st Tri	MATH611	College Algebra	(C)	✓						
	ENGG601	Engineering Drawing	(C)	✓					✓	
	CHEM611	General Chemistry 1	(C)	✓				✓	✓	✓
	ENGL611	English Communication Skills 1	(C)			✓				
	CENG611	Introduction to Computing	(C)	✓					✓	
	SOCI600	Sociology	(C)				✓			
Year 1 2nd Tri	MATH612	Plane and Spherical Trigonometry	(C)	✓						
	SCIE611	Biology	(C)	✓				✓	✓	
	CHEM621	Inorganic Chemistry	(C)	✓		✓		✓	✓	✓
	ENGL621	English Communication Skills 2	(C)			✓				
	ARAB600	Arabic Language	(C)				✓			
	CENG621	Computer Programming 1	(C)	✓						✓
Year 1 3rd Tri	MATH631	Differential Calculus with Analytic Geometry	(C)	✓						
	ENGL631	Speech and Oral Communication	(C)			✓				
	CHEM631	Organic	(C)	✓		✓		✓	✓	✓



18.	BSEnE CURRICULUM SKILLS MAPPING									
Year / Level	Course Code	Course Title	Core (C) or Option (O)	Programme Intended Learning Outcomes / Student Outcomes						
				SO1	SO2	SO3	SO4	SO5	SO6	SO7
		Chemistry								
	ENVE611	Elementary Surveying	(C)	✓		✓		✓	✓	✓
	HIST600	History of Bahrain and GCC Region	(C)				✓			
Year 2 1st Tri	HUMR600	Human Rights	(C)				✓			
	CHEM711	Analytical Chemistry	(C)	✓				✓	✓	✓
	MATH711	Integral Calculus with Differential Equations	(C)	✓						
	ENGL711	Technical Writing	(C)			✓				
	PHYS631	University Physics 1	(C)	✓				✓	✓	
Year 2 2nd Tri	MATH621	Probability and Statistics	(C)	✓						
	ENGG721	Thermodynamics	(C)	✓						✓
	CHEM722	Environmental Biochemistry	(C)	✓		✓		✓		
	ENGG722	Engineering Economy	(C)	✓			✓			
	PHYS711	University Physics 2	(C)	✓				✓	✓	
	ENVE721	Fundamentals of Environmental Engineering	(C)	✓	✓	✓		✓		
Year 2 3rd Tri	MATH733	Linear Algebra	(C)	✓		✓		✓	✓	
	CHEM723	Physical Chemistry	(C)	✓	✓	✓		✓		
	ENGG723	Safety Engineering	(C)				✓			
	ENVE722	Unit Operation: Fluid Mechanics	(C)	✓	✓	✓		✓		
	SCIE723	Environmental	(C)	✓		✓		✓		✓



18. BSEnE CURRICULUM SKILLS MAPPING										
Year / Level I	Course Code	Course Title	Core (C) or Option (O)	Programme Intended Learning Outcomes / Student Outcomes						
				SO1	SO2	SO3	SO4	SO5	SO6	SO7
		Microbiology								
	ENGG724	Engineering Mechanics	(C)	✓						
Year 3 1st Tri	CHEM811	Water Chemistry	(C)	✓	✓	✓		✓	✓	✓
	MATH722	Advanced Mathematics	(C)	✓					✓	✓
	ENGG811	Engineering Materials	(C)	✓			✓	✓		
	ENVE614	Unit Operation: Heat Transfer	(C)	✓	✓	✓		✓		✓
	ENGG811	Professional Ethics and Engineering Laws	(C)				✓			
	CHEM811	Atmospheric Chemistry	(C)	✓	✓	✓		✓		✓
Year 3 2nd Tri	ENVE821	Water Resources Engineering	(C)	✓	✓	✓		✓		✓
	ENVE822	Instrumentation and Control	(C)	✓		✓		✓	✓	✓
	ENVE823	Unit Operation: Mass Transfer	(C)	✓	✓	✓		✓	✓	✓
	MATH732	Numerical Methods and Analysis	(C)	✓				✓	✓	✓
	ENVE824	Air Pollution and Prevention	(C)	✓	✓	✓		✓		✓
	ENVE825	ENVE Unit Operation: Physical and Chemical Treatment	(C)	✓		✓		✓	✓	✓
Year 3 3rd Tri	ENVE831	Air Quality Engineering	(C)	✓	✓	✓	✓	✓		✓
	ENVE832	Soil Engineering	(C)	✓	✓	✓		✓		✓
	ENVE833	Environmental Engineering	(C)		✓	✓	✓	✓		✓



18. BSEnE CURRICULUM SKILLS MAPPING										
Year / Level	Course Code	Course Title	Core (C) or Option (O)	Programme Intended Learning Outcomes / Student Outcomes						
				SO1	SO2	SO3	SO4	SO5	SO6	SO7
		Laws and Regulations								
	ENVE834	Environmental Quality Systems Engineering	(C)	✓	✓	✓		✓		
	ENVE835	Unit Operation: Biological Treatment	(C)	✓	✓	✓		✓	✓	
	ENVE836	Technopreneurship	(C)			✓	✓	✓		✓
Year 4 1st Tri	ENVE837	Methods of Research with Inferential Statistics	(C)		✓		✓			✓
	ENVE838	Project and Engineering Management (Risk Analysis)	(C)	✓			✓	✓	✓	
	ENVE839	Engineering Hydrology		✓	✓	✓		✓		
	ENVE840	Oil and Gas Technology 1	(C)			✓		✓		✓
Year 4 2nd Tri	ENVE849	Climate and Global Warming) Programme Electives	(O)	✓		✓		✓	✓	
	ENVE841	Environmental Planning and Design	(C)	✓	✓	✓		✓		
	ENVE842	Industrial Attachment	(C)	✓	✓	✓	✓	✓	✓	✓
	ENVE843	Environmental Engineering Project Design A	(C)	✓	✓	✓	✓	✓	✓	✓
Year 4 3rd Tri	ENVE844	Wastewater Engineering	(C)	✓	✓	✓		✓		
	ENVE845	Oil and Gas Technology 2	(C)			✓		✓		✓
	ENVE846	Environmental	(C)			✓	✓			✓



18. BSEnE CURRICULUM SKILLS MAPPING										
Year / Level I	Course Code	Course Title	Core (C) or Option (O)	Programme Intended Learning Outcomes / Student Outcomes						
				SO1	SO2	SO3	SO4	SO5	SO6	SO7
		tal Impact Assessment								
	ENVE847	Environmental Engineering Project Design B	(C)	✓	✓	✓	✓	✓	✓	✓

### Course Description

#### REMEDIAL CLASSES

COURSE CODE	COURSE TITLE	LEC Hrs	LAB Hrs	CREDIT UNITS	PRE-REQUISITES
MATH500	Remedial Mathematics	3	0	0	-
This course is a comprehensive study of mathematical skills in arithmetic which should provide a strong mathematical foundation to pursue formal courses in college mathematics. Topics include principles and applications of whole numbers, fractions, decimals, percent, rates, ratio and proportion, measurements and prerequisite concepts for algebra, geometry and statistics.					
ENGL501	Speaking and Listening	9	0	0	-
ENGL501 is a required remedial course for entering students whose English language skills need further improvement and enhancement to be able to cope with the university's academic courses. It utilizes an integrated approach in developing the students' English macro skills with emphasis on speaking and listening. Further, this course introduces the students to English language arts where they get involved and engaged in three phases (beginner, intermediate and advanced). It intensifies its course intended learning objectives with the utilization of audio-lingual presentations where the students are expected to gain more knowledge to communicate effectively in English.					
ENGL502	Grammar and Vocabulary	9	0	0	-
ENGL502 is a required remedial course for entering students whose English language skills need further improvement and enhancement to be able to cope with the university's academic courses. It utilizes an integrated approach in developing the students' skills in grammar and vocabulary in three phases (beginner, intermediate and advanced). In addition, it includes information related to dictionary use, basic grammar rules and daily use vocabulary words through a variety of contexts, written responses, idioms, writing structures, settings of writing and the process of forming written communication where the students are expected to gain more knowledge to communicate effectively in English.					

### FIRST YEAR

#### FIRST TRIMESTER

COURSE CODE	COURSE TITLE	LEC HRS	LAB HRS	CREDIT UNITS	PRE-REQUISITES
MATH611	College Algebra	3	0	3	-
This course is designed to familiarize learners with main theories, principles and concepts of college					



algebra that are useful in analysis and simplification of basic and some advanced mathematical problems. Content includes functions which are polynomial, rational, exponential, logarithmic and related equations. Sketching graphs, Matrices, determinants, progressions and inequalities as applied to engineering.					
ENGG611	Engineering Drawing	2	2	3	-
This course deals with core theories, principles and concepts of the topics of This course deals with the application of Computer-Aided Drafting Design (CADD) in sketching and drawing to produce engineering drawings. The student will learn the appropriate AutoCAD drawing and modifying commands to generate 2D drawings and orthogonal projections of 3D drawings. The course will cover editing, modifying and plotting 2D and 3D drawings.					
CHEM611	General Chemistry 1	2	2	3	-
This course demonstrates atomic theories, relationships between structure and properties of matter, scientific notation, density calculation, Atomic structure and energy levels, periodic table, ions formation and chemical bonding, chemical reactions and emphasizing the chemical change, balancing equation, Discussion on gas law includes properties and application of gas laws, Acids and bases, solution and clarification of acid – base concept.					
ENGL611	English Communication Skills 1	3	0	3	-
This is an introductory course in English communication designed to provide comprehensive, up-to-date and relevant instruction in the correct use of grammar. It intends to build up students' confidence in communicating their thoughts, ideas, information and messages through the functions and structures of different words, phrases, clauses, sentences and paragraphs. In addition, the integration of language skills increases their communicative competence and prepares them for the academic and social challenges in college and beyond.					
CENG611	Introduction to Computing	2	2	3	-
This course covers the detailed knowledge and understanding of computer hardware and software. It includes the discussion of number system, networking and internet and the interdisciplinary science of computing. It also provides a discussion of programme development structures and algorithm and flowchart development. The laboratory focuses on configuring web browsers security, configuring E-mail security, configuring OS security and working with Microsoft Excel and Visio.					
SOCI600	Sociology	3	0	3	-
This course is designed to expose students in a detailed approach of studying society. It intends to give emphasis on the sociological perspectives, relationships with other social sciences, the main figures in sociological development, including introduction to culture, transformation of societies, importance of socialization, social groups, deviance and social control. Further, it incorporates the discussions on social institutions that enable the college students to understand the economic perspective from ancient to present, the evolution of education and the current viewpoint of family.					
EUTH400	Euthenics 1	1	0	0	-
This course is designed to bring in the policies and procedures in the university, to guide the students in the performance of their respective role and to become adept on ideals needed in their academic pursuit. Thus, students are oriented on the history, vision, mission, values and objectives of the university, the services and academic support available, the academic and non-academic policies, the different misconduct and violations with corresponding penalties in which the learning objectives are better facilitated by various classroom discussion through collaborative teamwork learning experience.					
MATH612	Plane and Spherical Trigonometry	3	0	3	-
This course is designed to familiarize learners with main theories, principles and concepts of plane and spherical trigonometry that are useful in analysis and simplification of some advanced mathematical problems. The course covers topics on angles and their measurements, trigonometric/circular functions, inverse trigonometric functions, identities, graphs of trigonometric functions, solutions of trigonometric equations, solutions of right and oblique plane triangles, introduction to spherical trigonometry and its applications					



SCIE611	Biology	2	2	3	-
This course focuses on the detailed knowledge and understanding of the fundamental life processes and functions of living systems including the nature of knowledge relating to cell structure, function and metabolism, bioenergetics, genetics and biotechnology, cellular reproduction and cell division, evolution, biodiversity, and ecology. The students will demonstrate the importance between explanations based on evidence through inquiry-based laboratory activities to provide insight into scientific method.					
CHEM621	Inorganic Chemistry	2	2	3	CHEM61 1
Inorganic chemistry is the study of the synthesis, reactions, structures and properties of compounds of the elements. Inorganic chemistry encompasses the compounds - both molecular and extended solids - of everything else in the periodic table, and overlaps with organic chemistry in the area of organometallic chemistry, in which metals are bonded to carbon-containing ligands and molecules. Inorganic chemistry is fundamental to many practical technologies including catalysis and materials (structural, electronic, magnetic etc.), energy conversion and storage, and electronics. Inorganic compounds are also found in biological systems where they are essential to life processes.					
ENGL621	English Communication Skills 2	3	0	3	ENGL611
This is an intermediate course in English communication geared towards equipping the college students with writing skills in preparation for academic writing. It progresses from familiarizing the sentence conventions to balancing the structures of the sentence for variation and rhythm. Further, it enables students to follow the principles that govern the composition writing in achieving unity, coherence and emphasis; to improve their expository, descriptive, narrative and argumentative works and to get hold of the discipline in academic writing for future advantages by providing them the opportunity in adhering the process of writing for effective communication.					
ARAB600	Arabic Language	3	0	3	-
<p>ركز مقرر ARAB400 على دراسة أساسيات اللغة العربية كقراءة وتحليل و نقد وبيان خصائص النصوص المطلوبة التي تتناول مختلف الأجناس الأدبية نثرا وشعرا. كما يركز هذا المقرر على دراسة وفهم وتطبيق القواعد النحوية والأساليب الصرفية الأساسية في اللغة العربية مع مراعاة مهارات الكتابة الإملائية الصحيحة.</p> <p>The course focuses on the fundamentals of Arabic language, such as reading, analyzing, and critique. It explains the characteristics of the required texts, which deal with different literary genres, prose and poetry. The course also focuses on the understanding and application of grammatical rules and basic morphological methods in Arabic, taking into account the correct spelling skills</p>					
CENG621	Computer Programming 1	2	2	3	CENG611
This course covers detailed knowledge in problem solving and algorithm development, with emphases on developing good programming habits, and programming in a modern computer language. The course familiarizes the students with the features of object-oriented programming and its applications to solve the problems. It includes a discussion of an overview of the Java language syntax, including packages, classes, methods, variables, conditional statements, and control flow. The laboratory focuses on the implementation of the programming theories and concepts in Java programming language using the tool Java Eclipse.					
EUTH401	Euthenics 2	1	0	0	EUTH400
This course is designed to provide the discussion on the students' rules and regulations of the university in order to practice the right conduct of behavior inside and outside the university premises. It intends to teach the students on the different stages of personality development, the equivalent penalties in different academic offences and factors that influence behavioral multiple intelligences. Further, the incorporation of oral/written communication through individual and group discussions can encourage learners to ponder on the meaning of life and discover the purpose of their existence.					
MATH631	Differential Calculus with Analytic Geometry	5	0	5	MATH611, MATH622
This course is intended to develop practical skills in differential calculus and analytic geometry. Emphasis is placed on functions, limits and continuity, fundamental concepts of analytic geometry, explicit and					



implicit differentiation of algebraic and transcendental functions, conics, higher derivatives, polar coordinates and its applications (equations of tangent and normal lines, sketching polynomial curves, maxima and minima problems and time rates)					
ENGL631	Speech and Oral Communication	2	2	3	ENGL62
This is a developmental course in English communication geared towards competent, efficient and effective interpersonal speaking across communicative contexts. It refines oral communication skills through accurate articulation of segmental phonemes, pronunciation drills and enunciation of the suprasegmental features of speech, specifically sentential stress and intonation. Further, it incorporates the mechanics and techniques of speech craft and delivery with emphases on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.					
CHEM631	Organic Chemistry	3	2	4	CHEM62 1
This is a course that deals with the different hydrocarbons and their derivatives with emphasis on the theoretical concepts, properties, and stereochemistry, synthesis and reaction mechanisms of organic reactions. The laboratory part includes techniques such as purification /separation, physical characterization, reaction types, and synthesis of organic compounds.					
HUMR600	Human Rights	3	0	3	SOCI600
<p>تناول هذا المقرر تمكين الطالب و جعله قادرا على معرفة الخلفية التاريخية لحقوق الإنسان، المفاهيم و الاصول الفلسفية و الرؤيا الاسلامية لحقوق الانسان كما يتناول بالعرض و التحليل مصادر حقوق الإنسان كالإعلان العالمي لحقوق الإنسان، و العهد الدولي الخاص بالحقوق المدنية و السياسية و العهد الدولي الخاص بالحقوق الاقتصادية و الإجتماعية و الثقافية و الوثائق الدولية الأخرى ذات الصلة بحقوق الإنسان ماورد فيها من الحقوق و التمييز بينها. كما يتناول بالمقارنة ذاتها ما ورد في الوثائق الوطنية مثل دستور مملكة البحرين و الميثاق الوطني و كيفية تطبيقها. و يُمكن الطلبة من مهارات تحليل و تفسير و نقد التطبيقات و التجاوزات فضلا عن القدرة على التحليل و التواصل و عرض مسائل حقوق الإنسان بمختلف الوسائل.</p> <p>This course makes the students able to know the background, main concepts of Human Rights and the philosophical thoughts and Islamic view which contribute in modern Human Rights. It makes them able to analyze what is mentioned in different kinds of Human Rights sources as Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and International Covenant on Economic, Social and Cultural Rights. It deals in the same approach with the National Sources of Human Rights such as the Constitutional Law of Kingdom of Bahrain and National Action Charter with applications as well. The course makes the students able to analyze, discuss and debate Human Rights issues in different ways.</p>					
HIST600	History of Bahrain and the GCC Region	3	0	3	-
<p>يتناول المقرر <b>HIST600</b> دراسة تاريخ مملكة البحرين و منطقة الخليج العربي و يُظهر تعدادا للاحداث الهامة في البحرين و منطقة الخليج العربي و آثارها على الوضع الراهن ، و يغطي الأهمية الاستراتيجية و المكانية للبحرين للبحرين بدءا " من الحضارات القديمة و مرورا" ألى العهد الاسلامي، و الاحتلال البرتغالي، و صراع القوى في القرن السابع عشر، و صعود قبيلة العتوب، و البحرين تحت الحماية البريطانية و ابرام المعاهدات مع بريطانيا، و انسحاب القوات البريطانية من البحرين و الخليج، و يتناول وصف الاماكن و الشخصيات و التطورات التاريخية و الانجازات في البحرين في عهد حكام البحرين، و البعد العربي و الاسلامي في تكوين هوية البحرين ، أنضمام لمجلس التعاون الخليجي ، و تاريخ دول الخليج العربي (دول مجلس التعاون الخليجي)، و مع نهاية الكورس يكون الطالب قادر على تحليل الجذور التاريخية للبحرين لتكوين الهوية الوطنية ، و التمتع بمقدرة الاتصال الشفهي و الكتابي و العمل بشكل منتج و فعال ضمن فريق واحد.</p> <p>This Course includes the history of the Kingdom of Bahrain and the Arabian Gulf region. It includes the important events in Bahrain and the Arabian Gulf region and their impact on the current situation. It covers the strategic importance of Bahrain, starting with "Ancient civilizations and passing through" the Islamic era, Bahrain's entry into Islam, Portuguese occupation, competition of powers in the 17th century and the rise of a tribe of Al-Atub. It includes the history of Bahrain under the British protection and the conventions between Bahrain and Great Britain up to British troops leaving the region. It describes the places and persons as well as the historical developments and achievement in Bahrain during the time of Al- Khalifah. It includes independence of Bahrain, issuing of the first constitutional</p>					



law, reform project by His Majesty King Hamad, constitutional amendments, establishment of GCC, history of Arab Gulf states. It makes the student able to present his patriotic character through historical discussions.					
ENVE611	Elementary Surveying	2	2	3	MATH622
This course introduces the fundamental principles and practices common to the industry for working as a land surveyor. Provide exposure to common software and other methods for site surveying and prepare the student for other survey courses. Care and operation of instruments, concepts of horizontal and vertical control; measurement of horizontal distances, vertical angles and elevation differences, basic surveying computations and field practice. Coverage includes the definition and analysis of errors of measurement.					
CHEM711	Analytical Chemistry	3	2	4	CHEM631
This course includes an introduction to the theory and applications of analytical chemistry. Topics consist of chemical analysis, acids and bases, volumetric and gravimetric analysis, fundamentals of spectroscopy, chromatography and electro analytical methods of analysis. The laboratory experiments include acid-base behavior, spectroscopy (UV-VIS and AAS) and chromatography (HPLC & GC)					
MATH711	Integral Calculus with Differential Equations	5	0	5	MATH631
This course provides the students with knowledge and understanding of core concepts, theories and principles in evaluating definite and indefinite integrals and its applications in solving engineering and computing problems. The course also covers solutions to ordinary differential equations which can be used in modeling important applications in the scientific and engineering fields.					
ENGL711	Technical Writing	3	0	3	ENGL621
This is an advanced course in English academic writing designed to deal with the application of the technical writing principles with the correspondence on business, science, and technology. It aims to develop the technical writing skills and communication of the college students thru the discussions of its elements and ethics with the use of digital technologies. Furthermore, it enables students to adapt the various communication routes in the workplace, to conceptualize suitable contents of technical writing, to understand the characteristics and other methods of communication techniques, to plan and organize advanced level tasks and to work effectively and with accountability with other team members in a creative and productive manner, in any language learning scenario when achieving personal and group outcomes.					
PHYS631	University Physics 1	2	2	3	MATH631
This course is designed to explore the concepts of motion using vectors and other mathematical models and their advanced application, such as the application of Newton's laws of motion, projectile motion, work, energy, momentum and impulse, rotational dynamics, equilibrium of a rigid body, and periodic motion.					
MATH621	Probability and Statistics	3	0	3	MATH631
This course provides a demonstration of the main concepts of probability and statistics with applications. IT also covers identifying the theorem of probability and linked with real life problems. How to differentiate between the combination and permutation, explain how to find the mean and variance from the moment generating function. Explain and interpret the findings from different hypothesis tests for decision making. Finally, SPSS will be used to run the statistical measures (e.g. hypothesis tests and regression model)					
ENGG721	Thermodynamics	3	0	3	PHYS711
Thermodynamics deals with the study associated with details of the properties of the pure substance to adept the necessary process related to energy concepts, ideal gas laws, work and heat, processes of ideal gases, and gas and steam cycles. It also includes a critical evaluation of various laws and its practical applications of thermodynamic principles in power plan.					



CHEM722	Environmental Biochemistry	2	2	3	SCIE611
This course provides students with knowledge on the fundamental principles of chemistry applied to life processes. It covers chemistry of important constituents of living matter, biosynthesis, bioenergetics, metabolic control, and transport mechanism. The laboratory part includes the separation, identification, and characterization of biomolecules.					
ENGG722	Engineering Economy	3	0	3	MATH611
This course deals with the advanced study of the core theories, principles and concepts of economic environment, interest and money-time relationship, depreciation, capital financing, comparing alternatives, replacement studies, break-even analysis, benefit cost ratio, and benefit cost difference. It presents mathematical techniques and practical advice for evaluating decisions in the design and operation of engineering systems.					
PHYS711	University Physics 2	2	2	3	PHYS631, MATH711
This course is designed to explore the concepts of electricity and magnetism using the concepts of mechanics, vectors, and other mathematical models and their advanced application, such as application of Coulomb's law, Gauss's law, Ohm's law, Kirchhoff's laws, electric potential and potential difference, basic circuits, series and parallel circuits and combinations, magnetic field and flux, induced EMF and applications such as electric motors and basic AC electric generators.					
ENVE721	Fundamentals of Environmental Engineering	3	0	3	SCIE611
This is an introductory course that presents general concepts and topics on environment, aquatic and terrestrial ecosystems. Topics include the biological and chemical principles that relate to current environmental issues, conservation of plants and animals, energy flow as well as nutrient cycling, basic ecological and technological concerns and solutions to environmental problems.					
MATH733	Linear Algebra	2	2	3	MATH711
This course use specialist level skills to relate to and adapt main and core theories and concepts in the study of matrices and determinants, and their applications in numerical solutions of systems of linear equations. It also includes important topics such as linear transformations, eigenvalues and eigenvectors, complex vectors and matrices and numerical linear algebra. In the laboratory, MATLAB is use as a mathematical software and solutions to a variety of mathematical problems are determined.					
CHEM723	Physical Chemistry	3	2	4	CHEM711
This course presents an intensive overview of the laws of thermodynamics followed by applications to the properties of gases, liquids, and solids, as well as chemical reaction thermodynamics and the kinetic theory of gases at equilibrium. It also deals with the study of chemical kinetics with applications to gases, solutions, and phase equilibria to provide a firm foundation for understanding the physical principles that govern chemical and biological systems. Laboratories cover physical chemistry techniques drawn from these areas.					
ENGG723	Safety Engineering	2	0	2	-
This course deals with the detailed study of the principles of safety engineering and applications of safety principles to industrial and commercial systems. It covers topics concerning safety management, occupational health, fire prevention and control, electrical safety and environmental safety. Further, students will learn how to conduct risk analysis and some of the mitigation measures.					
ENVE722	Unit Operation: Fluid Mechanics	2	2	3	ENGG721
This is an introduction to the basic phenomena and principles of fluid flow. The course discusses fluid properties, fluid statics, conservation of mass, momentum, and energy. Emphasis is on quantitative analysis of velocities, pressures, shear stresses, and flow forces. Measurement of fluid properties, pressures, velocities, and flow forces are performed in laboratory sessions.					



SCIE723	Environmental Microbiology	2	2	3	SCIE611
This course covers the study of the basic microbiological concepts and techniques. Topics include the study of microorganisms in natural environments like specialized techniques for sampling, culture, isolation and identification. Also included are the ecology and diversity of microbial communities in soil, water, and air as well as in unusual environments such as deep-sea hydrothermal vents. Topics include wastewater treatment, bioremediation, biofilm engineering, and other applications related to public health, agriculture, food science, and industry.					
ENGG724	Engineering Mechanics	3	0	3	PHYS711
This course deals with the core theories, principles and concepts of force systems, force components, free body diagrams, vectors, resultant of force systems, moment of forces, and equilibrium of rigid bodies, It also includes critical analysis of structures, methods of analysis of trusses, and, distributed forces centroids and center of gravity, and the theory and application of friction					
CHEM811	Water Chemistry	2	2	3	CHEM722
This course is a study of geochemical and biochemical processes that influence the chemical makeup of water. Emphasis is placed on controls affecting the chemical quality of natural waters and models used to describe the presence and concentration of dissolved inorganic and organic constituents and dissolved gases. Techniques used to interpret and evaluate chemical analyses are covered along with sampling methods and use of standard water testing equipment.					
MATH722	Advanced Mathematics	2	2	3	MATH711
This course deals with the study of complex numbers, series solutions of ordinary differential equations by power series, Bessel Function, Frobenius method. Basics of Fourier series, Fourier transform, Laplace and inverse Laplace Transforms. Using MATLAB or other mathematical software in order to solve mathematical problems.					
ENGG811	Engineering Materials	3	0	3	CHEM611
This course deals with the study the core principle and concept of engineering material science. It covers the defining features of properties and structure of different engineering materials. It discusses the classifications of materials such as metals, polymers, ceramics, and composites. It also covers the formation of bonds and forces between particles, amorphous and crystalline structure, the impact factor, solid solutions and phase diagram, and defects in crystalline materials. It also covers the analysis of the physical, mechanical, electrical and magnetic properties of materials. This also emphasizes the various considerations in selecting materials appropriate for a particular application.					
ENVE811	Unit Operation: Heat Transfer	2	2	3	ENGG721
This course covers the basic principles of heat fluxes, in the forms of conduction, convection, and radiation of heat. Analytical and numerical methods are presented for two-dimensional conduction problems. Specific topics include forced convection in laminar and turbulent flows; heat transfer at low rates, evaporation; and thermal radiation. Problems and examples will emphasize modeling of complex systems drawn from environmental applications such as water and waste management.					
ENGG811	Professional Ethics and Engineering Laws	1	0	1	-
This course explores the core theories, principles and concepts in the field of ethics as it relates to engineering practice. This framework is used to examine several case studies of ethical problems in engineering. It discusses the core concepts of environmental protection and sustainability to understand how they relate to engineering ethics. The course is intended to promote greater reflection by engineers on their activities to better understand the social dimensions of engineering practice.					
CHEM811	Atmospheric Chemistry	3	0	3	CHEM631
This course deals with the fundamental chemical processes of the Earth's atmosphere. The topics					



include atmosphere layer, atmospheric transport, biogeochemical cycles of gaseous nitrogen, oxygen, carbon and sulfur compounds, aerosol, fog, smog and acid rain, troposphere air pollutions, ozone hole and stratosphere ozone depletion, greenhouse gases and global warming, industrial revolution and climate change, chemical kinetics in mesosphere and thermosphere.					
ENVE821	Water Resources Engineering	3	0	3	CHEM811
This course that focuses on the concept, theory, design, and operation of urban water supply systems. Emphasis will be placed upon a fundamental understanding of commonly used water collection and treatment technologies. Major sections of the course cover water cycle, water consumption and demand, water collection, storage and transportation, drinking water quality, conventional surface water treatment unit operations and processes, advanced water treatment technologies, water stabilization and corrosion control, urban water distribution and transmission, water reclamation and total water management. The course aims to introduce to students the basic concept of water resources engineering and the knowledge of urban water supply. At the end of this course, students who fulfill the requirement of the course will be able to present the principles and theories behind the common water collection and treatment technologies and to conduct conceptual design of freshwater collection systems, common surface water treatment processes and urban water distribution systems.					
ENVE822	Instrumentation and Control	2	2	3	CHEM711
Introduction to the fundamental concepts of instrumentation and measurement. The components of instrumentation (transducers, amplifiers, filters) are discussed. Specific measurement techniques including mass spectrometry, spectroscopy, chromatography (gas, ion exchange, HPLC), electro-chemical probes (membrane electrodes), biosensors and remote sensor devices are covered with emphasis on selection of methods and practical applications in environmental monitoring. Database management, data analysis, statistical treatment of data. Development of optimum monitoring strategy, scheduling, sampling frequency. The course includes laboratory exercises.					
ENVE823	Unit Operation: Mass Transfer	2	2	3	ENVE811
This course covers the basic principles of heat fluxes, in the forms of conduction, convection, and radiation of heat. Analytical and numerical methods are presented for two-dimensional conduction problems. Specific topics include forced convection in laminar and turbulent flows; heat transfer at low rates, evaporation; and thermal radiation. Problems and examples will emphasize modeling of complex systems drawn from environmental applications such as water and waste management.					
MATH732	Numerical Methods and Analysis	2	2	3	MATH722
This course demonstrates critical knowledge and understanding of specialist theories, principles and concepts of the study of numerical approximations and errors, numerical solutions of non-linear equations, interpolation and curve fittings, numerical differentiation and integration. The course also covers analysis of accuracy of numerical differentiation and integration methods and solution of initial value problems using Euler Method. Analysis of accuracy of Euler's method. The course also includes laboratory components that make use of MATLAB as tool in solving problems in Numerical Analysis.					
ENVE824	Air Pollution and Prevention	3	0	3	ENVE721
This course introduces the fundamentals of air pollution, with a consideration of the background and historical perspective, and a commentary on current air quality policies and standards. The course also considers the health impacts of air pollution. The course discusses the major approaches for air pollution modeling and demonstrates the features and use of the most widely used commercial and freely available air quality models. Theory, principles, and practices related to the control of particulate emissions, Mechanical separations, Cost, and design of control systems. Micrometeorology, air dispersion; combustion fundamentals; pollutant formation mechanism and control technologies; abatement of volatile organic compounds using incineration techniques; Particulate and aerosol abatement technology; particle technology, log-normal distribution; settling chamber, cyclone, electrostatic precipitator, bag filter.					



ENVE825	Unit Operation: Physical and Chemical Treatment	2	2	3	ENVE722
<p>This course serves as the unit operations course for physical and chemical treatment of water and wastewater. Fundamental concepts of physical-chemical processes that affect water quality in natural and engineered environmental systems. Focus is on developing a qualitative understanding of mechanisms as well as quantitative tools to describe, predict, and control the behavior of physical-chemical processes. Topics include reactor hydraulics and reaction kinetics, gas transfer, adsorption, particle characteristics, flocculation, gravitational separations, filtration, membranes, and disinfection.</p>					
ENVE831	Air Quality Engineering	3	0	3	ENVE824
<p>Problems and methodologies for studies of environmental management, with an emphasis on air pollution. Key topics include source of pollutants; focusing on combustion chemistry for a hydrocarbon fuel; behavior of gaseous and particulate pollutants in the atmosphere, including the role of meteorology and the use of dispersion equations; effect of pollutants on human health and global climate; and procedures by which air pollution standards are developed and enforced by regulatory agencies. Statistical treatment of data is included at several places in the course.</p>					
ENVE832	Soil Engineering	3	0	3	ENVE821
<p>Soil Engineering introduces basic knowledge of the fundamental concepts of soil behaviour and gives an introduction into general geotechnical engineering. The course describes the relationship between soils and its geological origins and demonstrates the significance of the particles size distribution and mineralogy of the soil on its engineering behaviour. The effects of the compaction process on the engineering properties of soil are discussed and methods are developed to allow students to design fills. The course explains the principle involved in the flow of water through soils, including the methods of analysis and the use of these methods to estimate water pressures and flows in a variety of differing engineering situations. The course discusses the shear strength of soils and develops methods for applying this knowledge in the analysis of bearing pressure for foundations and in the estimation of earth pressures behind earth retaining structures. Methods of analysis of the consolidation of soils are discussed and analytical methods are developed to estimate ground movements due to the consolidation of the soil.</p>					
ENVE833	Environmental Engineering Laws and Regulations	3	0	3	ENVE722
<p>An Overview of Environmental Law and its Development, Legal and Administrative Structures for their Implementation from the International, Regional and National Perspectives, Focus on Basic Pollution Laws relating to Air, Water, Waste, Hazardous Substance and Noise, Nature Conservation Laws and Laws Governing Environmental Impact Assessment, Pakistan Laws and the Laws of Selected Countries, Application of Policy Issues in Environmental Management and the Political Economy of Environmental Regulations.</p>					
ENVE834	Environmental Quality Systems Engineering	3	0	3	ENVE722
<p>This course deals about introduction to engineering aspects of environmental quality control. Quality parameters, criteria, and standards for water and wastewater. Elementary analysis pertaining to the modeling of pollutant reaction in natural systems and introduction to the design of unit processes for wastewater treatment will be included.</p>					
ENVE835	ENVE Unit Operation: Biological Treatment	2	2	3	SCIE723
<p>This course covers the theory and application of biological processes used in the engineered treatment of waste streams, with an emphasis on municipal and industrial wastewaters and biosolids. Fundamental concepts of biological processes that are important in natural and engineered environmental systems, especially those affecting water quality. Incorporates basic fundamentals of microbiology into a quantifiable engineering context to describe, predict, and control behavior of</p>					



environmental biological systems. Topics include the stoichiometry, energetics, and kinetics of microbial reactions, suspended and biofilm processes, carbon and nutrient cycling, and bioremediation applications.					
ENVE836	Technopreneurship	3	0	3	ENGG722
The course deals with the study of entrepreneurship in IT industry by applying the core theories and principles of entrepreneurship and management in IT business. The course covers types of entrepreneurships, legal factors related to the project like Business act, company act, technology act and Industrial act, developing a Business plan by integrating business proposal writing skill, software skills, innovation and creativity skills. It also covers advanced level topics like risk management, configuration management and quality management					
ENVE837	Methods of Research with Inferential Statistics	3	0	3	MATH622
This course involves the development and analysis of experimental design. Students will also be introduced to some of the methods of statistical analysis frequently used in the environmental field such as two-way ANOVA, cluster analysis, multiple regression, population estimation models.					
ENVE838	Project and Engineering Management (Risk Analysis)	3	0	3	ENGG722
Introduction to techniques of risk-benefit analysis as applied to water resources and environmental engineering. Techniques of multi-objective water resource planning. The engineering political interfaces; consideration of political bargaining and decision-making and study of comprehensive application of risk analysis techniques for environmental control and protection purposes.					
ENVE839	Engineering Hydrology	3	0	3	ENVE821
This course is about learning both the concepts and physical principles of water flow as well as the techniques that can be used to solve hydrologic problems. In practice, hydrologists must quantify rates at which water is exchanged between the atmosphere, the ground, and the ocean, and this often involves manipulating data and solving sets of equations. It's fairly easy to lose sight of the conceptual part of the problem once you focus on techniques. Thus, one of the goals of this course is to give you a balanced view of hydrology -- one that includes a description of the physical processes plus a coherent presentation of the theories and techniques that are used in practice. The class is structured around the hydrologic cycle, which you can picture as a set of linked processes that cycle water between the ocean, atmosphere, and land surface.					
ENVE840	Oil and Gas Technology 1	3	0	3	ENVE821
This course integrates core theories of process overview in oil and gas technology. Students will be provided with the detailed knowledge and understanding on various main process involved in the oil and gas exploration and also provides detailed insight on various utility system and their working principles used in oil and gas technology. The course also covers topics on maintained of oil and gas well.					
ENVE841	Environmental Planning and Design	3	0	3	ENVE831
This course in Urban and Environmental Planning balances professional planning skills with a liberal education emphasizing interdisciplinary study. The scope of the planner's work encompasses present and future urban and environmental concerns, including such diverse issues as environmental impact, quality of life, and the public and private costs of development. Planners work in the public and private sectors in urban and rural areas. Public sector planners work for all levels of government, formulating plans to redevelop or rehabilitate downtowns and neighborhoods, develop land aesthetically and profitably, and regulate private development to protect public interests.					



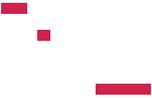
ENVE842	Industrial Attachment	0	12	6	4 <sup>TH</sup> Year Standing
This 6-unit course is the practicum course where the students are exposed to actual work environment. The students are required to complete 240 hours of on-site training. They are sent to work environments under the supervision of a practicum professor. Moreover, at the end of the course, individual student submits a final report and a performance evaluation made by the on-site supervisor.					
ENVE843	Environmental Engineering Design Project A	3	0	3	ENVE838
This course provides the senior engineering student with meaningful problem analysis and design experience. The project and its documentation must illustrate use of fundamental elements of the design process: establishment of objectives and criteria, synthesis, analysis, testing, and evaluation. The project report must address realistic constraints including economic factors, safety, aesthetics, ethics, and social impacts.					
ENVE844	Wastewater Engineering	3	0	3	ENVE835
This course that focuses on the concept, theory, design, and operation of urban water supply systems. Emphasis will be placed upon a fundamental understanding of commonly used water collection and treatment technologies. Major sections of the course cover water cycle, water consumption and demand, water collection, storage and transportation, drinking water quality, conventional surface water treatment unit operations and processes, advanced water treatment technologies, water stabilization and corrosion control, urban water distribution and transmission, water reclamation and total water management. The course aims to introduce to students the basic concept of water resources engineering and the knowledge of urban water supply. At the end of this course, students who fulfill the requirement of the course will be able to present the principles and theories behind the common water collection and treatment technologies and to conduct conceptual design of freshwater collection systems, common surface water treatment processes and urban water distribution systems.					
ENVE845	Oil and Gas Technology 2	3	0	3	ENVE840
This course integrates advanced theories of process overview in oil and gas technology. Students will be provided with the detailed knowledge and understanding on various main process involved in the oil and gas exploration and also provides detailed understanding of the oil and gas life cycle, the midstream and downstream aspects of the oil and gas industry such as, topsides facilities, refinery operations, gas processing, product transportation as well as economy aspects and environmental issues.					
ENVE846	Environmental Impact Assessment	3	0	3	ENVE834
The course covers the three primary processes of a quality system include: (1) core processes, their outputs, and the identification of significant environmental aspects and impacts, (2) key supporting processes, such as those for maintaining awareness of legal requirements, ensuring competency of employees, providing infrastructure, communicating quality system information, and monitoring and evaluating environmental performance, (3) management system supporting processes, such as document control, record control, and internal auditing.					
ENVE847	Environmental Engineering Design Project B	3	0	3	ENVE834
Continuation of Environmental Engineering Design Project A by individuals or teams with submission of final reports and oral presentations.					



TECHNICAL ELECTIVES

COURSE CODE	COURSE TITLE	LEC Hrs	LAB Hrs	CREDIT Units	PREREQUISIT E/S
ENVE848	Renewable Energy	2	2	3	ENVE834
<p>This course will provide students with the fundamentals, design tools, and state-of-the-art alternative energy technologies. The course is broken into two parts: the first part discusses alternative energy technologies such as wind, hydro, geothermal, ocean thermal energy conversion, and economics of alternative energy; the second part of the course deals with solar energy fundamentals and design/performance evaluation of solar collectors, passive and active applications of solar energy, thermal and electric energy storage, and alternative fuel technologies for transportation and power technologies.</p>					
ENVE849	Climate and Global Warming	2	2	3	ENVE834
<p>Climate change and global warming caused by human activity has become one of the most significant environmental, social and economic threats that we have faced. This course presents the science of global climate change and global warming. Emphasis is placed on scientific principles responsible for climate changes, observed evidence of global climate change and global warming, and future climate change. Course topics include climate system, greenhouse effect, El Nino, atmospheric and ocean circulation, Earth's past and present climate, climate models, future climate projection, and climate change impacts.</p>					
ENVE850	Remote Sensing	2	2	3	ENVE834
<p>This course emphasizes the understanding of the aerospace remote sensing foundations and the use of remote sensor data and image interpretation and processing techniques for environmental and urban applications. Specifically, the course will cover concepts and foundations of remote sensing, aerial photography and photogrammetry, visual image interpretation, characteristics of various sensing systems and an introduction to digital image processing techniques.</p>					
ENVE851	Hazardous Waste Management and Remediation	2	2	3	ENVE834
<p>This course includes hazardous waste management issues, programs, environmental regulations, handling of hazardous wastes, risk assessment, characterization, storage, disposal, and site remediation processes and remedial alternatives and implementation. It also covers management, planning, legal and engineering aspects of liquid and solid hazardous waste treatment and disposal.</p>					
ENVE852	Introduction to GIS	2	2	3	ENVE834
<p>This course introduces the concepts and components of a geographic information system (GIS). It also teaches the essential skills of operating a functional GIS through the use of ArcGIS software package. By completing this course, students will understand the operational processes of spatial data acquisition, editing and QA/QC, metadata development, geodatabase design, spatial query and display, spatial analysis and modeling, preliminary GIS application development, cartographic mapping and dynamic visualization, and GIS implementation basics. Students will also be exposed to Google Earth and common open source GIS tools, as well as the basic concepts of remote sensing and Global Positioning System (GPS).</p>					
ENVE853	Advanced Topics in Environmental Engineering	2	2	3	ENVE834
<p>Any important, relevant topic that is not covered in the given technical elective lists. Topics may be varied subject to students' interest and availability of faculty staff.</p>					





## UNIVERSITY OFFICERS

<b>DR. HASAN AL MULLA</b>	University President
<b>DR. HAITHAM ALQAHTANI</b>	Vice President for Academic Affairs
<b>DR. ADNAN AL TAMIMI</b>	Acting Vice President for Administration and Finance
<b>MR. ALI AL JASIM</b>	Director, External Affairs and Community Engagement
<b>DR. OMAR AHMED ALHAWI</b>	OIC, Dean of Student Affairs
<b>DR. VINODH NATARAJAN</b>	Acting Dean, College of Administrative and Financial Sciences
<b>DR. ANUPAMA PRASANTH</b>	Dean, College of Computer Studies
<b>DR. BEDA ALETA</b>	Dean, College of Engineering
<b>DR. RODALIN ASENAS</b>	Director, Center for General Education
<b>DR. AILEEN CADAY</b>	Senior Director, Quality Assurance and Accreditation Department
<b>DR. NIVAS MOHIDEEN JINNA</b>	Director, Research Center
<b>DR. MARK DOBLAS</b>	Head, Planning and Development Department
<b>DR. STEPHEN CHELLAKAN</b>	Institutional Research Officer
<b>DR. STEPHEN GUANSI</b>	Faculty Development Officer
<b>DR. CAREN BANSOLAY</b>	Corporate Communication Officer
<b>MR. REDHA JASIM RADHI</b>	Head, Registration Office
<b>MS. SARAH YOUSIF HUSSAIN</b>	Head, Admission Office
<b>MS. KHADIJA ISA YUSUF</b>	Head, Student Services and Guidance office
<b>MR. HUSSAIN AL KARRANI</b>	Head, International Education





**ENGR. RUTHERFORD Y. ANTIPOLO** Head, Information Technology  
Department

**MS. REMEDIOS QUINTO** Head, Library

**MR. HUSAM HUBAIL** Head, Placement Linkages and Alumni  
Department

**MS. ROMARITA G. PABILLORE** Head, Human Resources Department

**ENGR. EVANN LLOYD ASENCIO** Head, Facilities and Maintenance

**MS. ROSEMARIE ROSALES** Head, Purchasing and Property



## LOCATION AND CONTACT INFORMATION

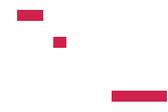
University of Technology Bahrain  
Bldg. 829, Road 1213, Block 712, Salmabad, Kingdom of Bahrain  
Postal Address: P.O. Box 18041, Kingdom of Bahrain  
[www.utb.edu.bh](http://www.utb.edu.bh)

For further information, contact:

**The Admission Officer**

Tel.: (+973) 17 787 978 local 7950  
Fax: (+973) 17 879 380  
Email: [info@utb.edu.bh](mailto:info@utb.edu.bh)







P.O. Box 18041,  
Salmabad,  
Kingdom of Bahrain

Email:  
[info@utb.edu.bh](mailto:info@utb.edu.bh)

Tel:  
+973 17787978

Website:  
[utb.edu.bh](http://utb.edu.bh)