

University Catalogue

AY 2023 - 2024

 **University of
Technology
Bahrain**

جامعة البحرين للتكنولوجيا

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ABOUT THE UNIVERSITY



University of Technology Bahrain (UTB) follows on from a vision and mission adopted for the university and is 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 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 that are on par with the best universities worldwide, taking pride in 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 that 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 several startups are booming to date, the college also offers a Bachelor of Science in Accounting and Finance.



The College of Computer Studies offers a 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 a 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 proof 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 of 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.



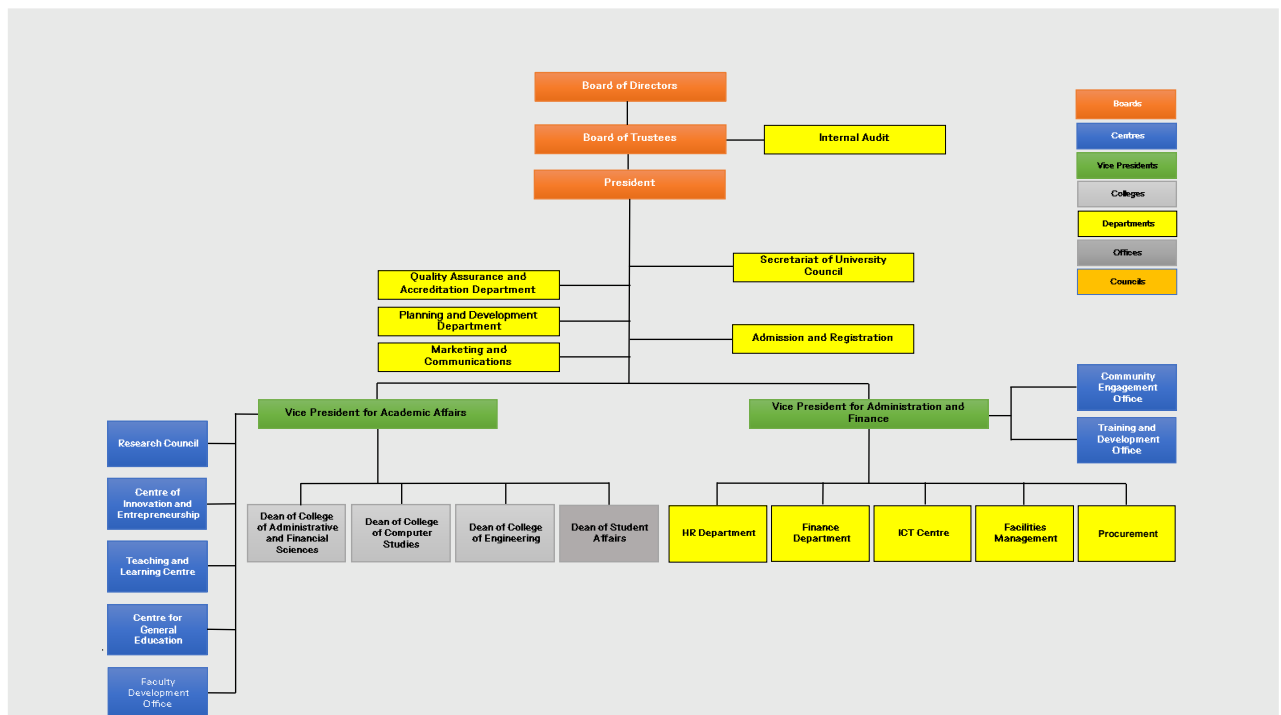
In its pursuit to be globally excellent, the university provided physical resources that enable it to carry out its mission with a high level of quality and efficiency. Classrooms are well-equipped with LCD projectors and smart boards. The ultra-modern laboratories such as the Speech, iMac, Research, SAP, CISCO, and Mechatronics, among others provide exceptional hands-on learning experiences that 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 the University of Technology (UTB) centers on you and 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 enhancing your 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 welcome to visit the university workdays at your most convenient time.

I wish you all the best!

DR. HASAN ALMULLA
President





VISION, MISSION AND VALUES

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, the Office of the Vice President of Academic Affairs, the 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 are equipped with the latest technology and will cater to the needs of business, engineering, and computer science students. The academic buildings 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 for 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 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 (DSA)

The Deanship of Student Affairs (DSA) forms one of the most important pillars of UTB. DSA has a crucial role in any university and any educational institution as it has a major impact on the educational process, accreditation, and international ranking. The DSA provides counseling, academic advising, referrals, academic tutoring, student activities planning, and sports and recreational programmes to the admission office, registration office, and student services office. It provides support and resources for orientation, transition, retention, graduation, and pre-employment activities to better prepare UTB students both personally and professionally. The Office, located on 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 programmes 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 is available from 8:00 am to 5:00 pm, Sunday to Thursday. Services 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, The Sports Facilities are equipped with amenities to support athletic activities and sports programmes of the university. It is part of the major expansion plan of the university. UTB contains several sports facilities equipped for students (including a football-Soccer field, Basketball court, Padel field, Tennis court, and Bing bong table).

Cafeteria

The University has restaurants and snack counters conveniently located on the ground floor to provide dining services to students, faculty, and staff.

Parking

The parking lot of the University can accommodate more than 500 vehicles at any given time. The parking area is for the use of faculty, staff, and students as well as special visitors and guests.

Students, members of the faculty, non-academic staff, and officers are required to secure a car pass for the university gate.

Students may apply to request to secure their car pass ([Special Needs Parking](#)) after registration by submitting copies of the following to the Deanship of Student Affairs to process and release the car pass:

- Certificate of Permanent Residency
- (CPR) \Student License
- Car Registration Card.
- Student's Contact Number.
- Student ID
- Medical Report for Special Needs. ([This is applicable only by the approval of the Dean of Student Affairs, after submitting a document of evidence for a valid reason](#))

The student should abide to the parking rules set by the Guidance Counsellor and respect the designated parking areas reserved for the handicapped. Roving guards and parking assistants are assigned to check the parking area from 7:30 am to 9:00 pm.



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 catalogue 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 are 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)

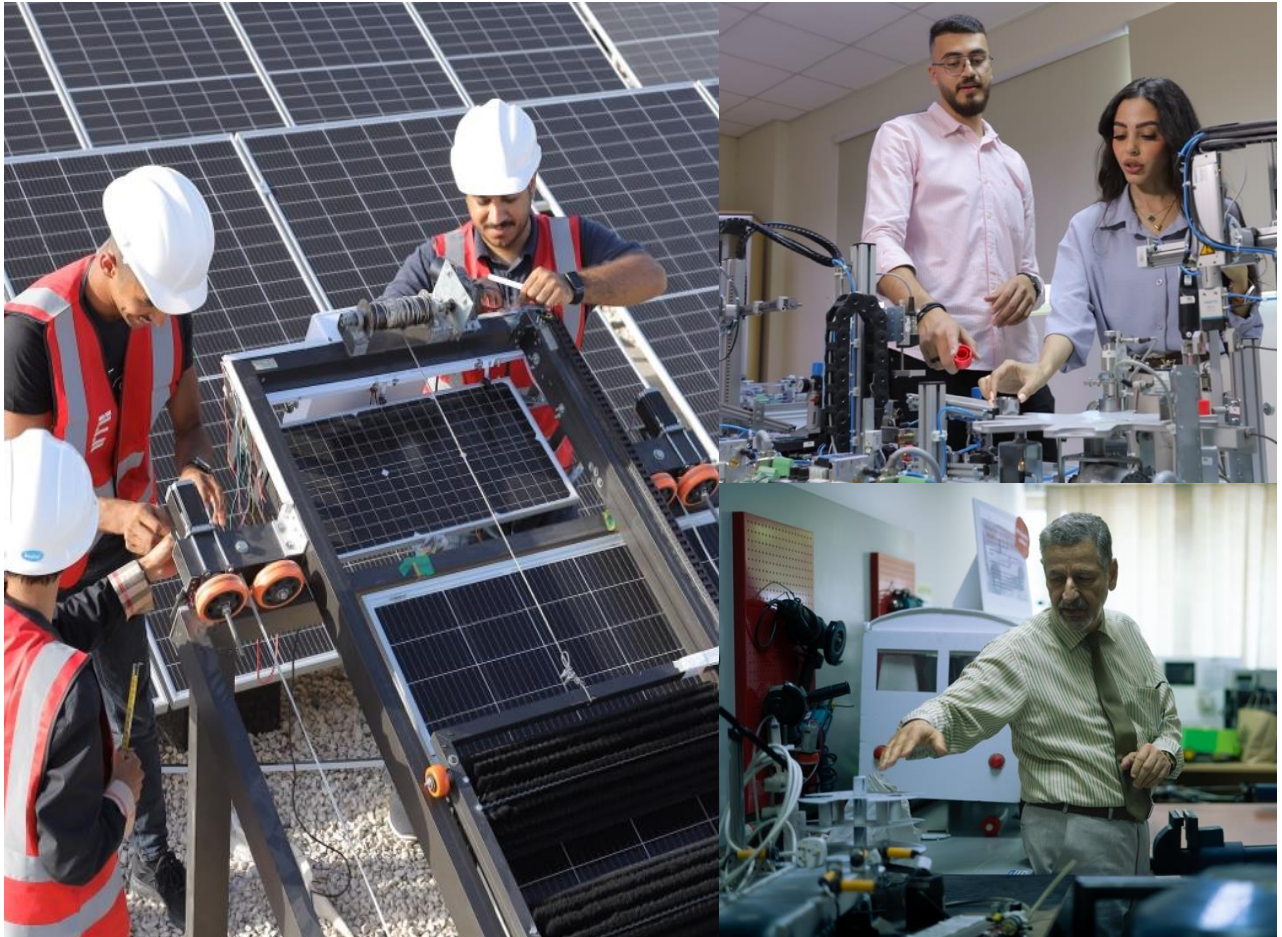
8:00 am – 4:00 pm (Friday & Saturdays)

Closed on Public Holidays



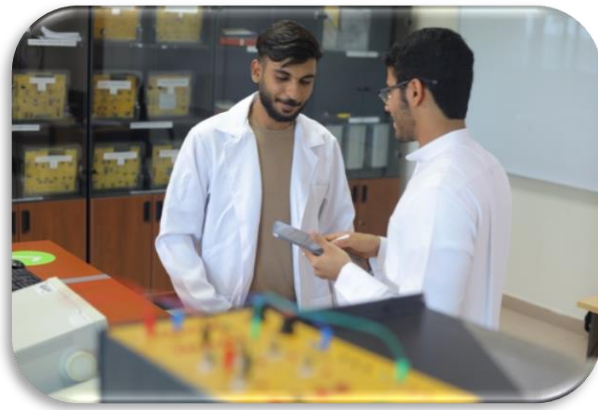
Mechatronics Laboratories

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 facilitate industry – oriented training since the hardware consists of didactically suitable industrial components.



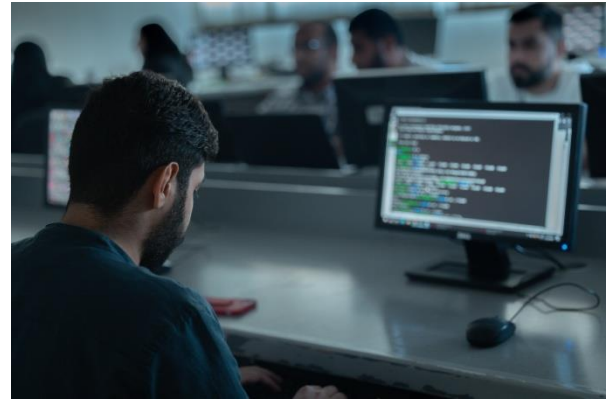
Digital Laboratory

The Digital Laboratory is well equipped with both De Lorenzo hardware and software facilities used by the students to perform the necessary experiments required on 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.



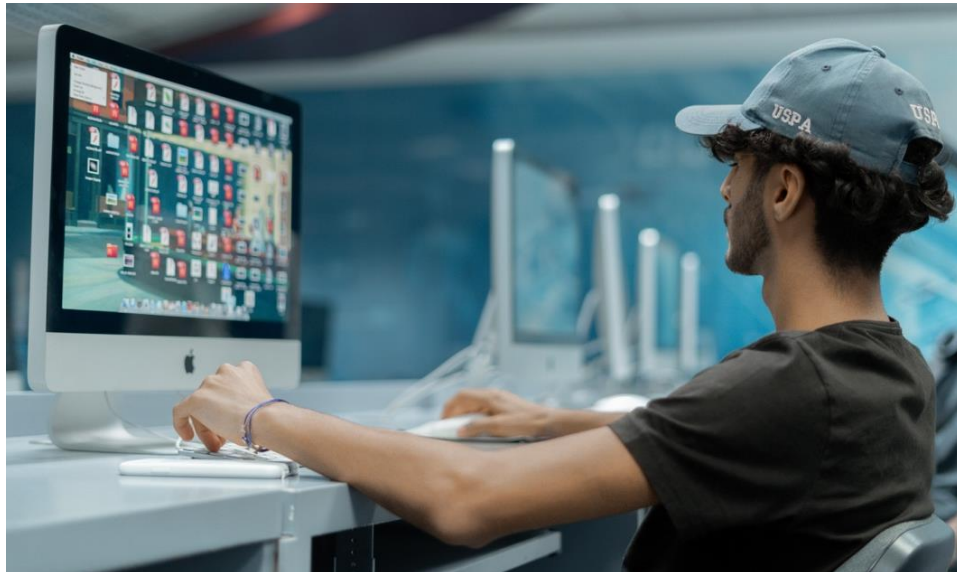
Computer Laboratories

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 Programme 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 programme.



IMAC Laboratory

The IMAC laboratory is dedicated to graphics, multi-media development and computer animation courses for undergraduate and post 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.

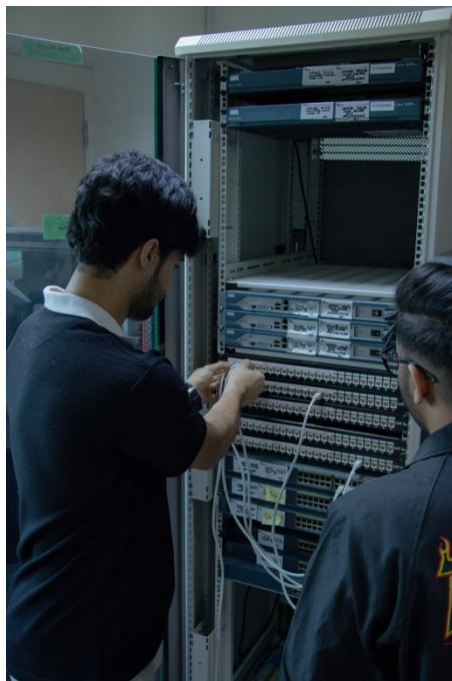
The networking laboratory is equipped with the following:

- 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 Services

The Guidance and Counseling allows students to discover their aptitudes and interests. The office has a staff that assists students in adjusting to university life, aids them towards self-knowledge and self-realization, and provides 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 with his study plan and monitors his academic performance and progress throughout his stay in the University.

Student Clubs and Organizations

Student organizations include the 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 throughout their campus life.

International Student Assistance

International students are provided with an orientation that will keep them comfortable during their initial stay at the University. This will also assist them in meeting other students who come from the same cultural backgrounds, which 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, may be assisted 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 First Year Undergraduate Students

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

- Filled out admission application form through eMADA-SIS or in person
- Minimum secondary school scores of 60% or its equivalent
- Online Placement Test (Oxford Online Placement Test (OOPT) result (if needed)
- 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:

Subtest Component for Bahraini, KSA, Kuwait, Qatar, Yemen, Switzerland, USA, and Ecuador Qualification		Programme		
		BSME, BSEnE, BSIT, BSBI, BSAF	BSCS, BSIE	BSIB
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.

Private school graduates with English as their medium of instruction are eligible for the exemption from the foundation program.

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 and English or its equivalent, his/her admissions depend on the following criteria:

Programme	Secondary School Grade	Placement Test in English (OOPT)	Remarks
All Programmes	60-79 % grade in English	Score \geq 51 %	No need for Foundation Course in English
		Score $<$ 51 %	Foundation Course in English



Programme	Secondary School Grade	Placement Test in English (OOPT)	Remarks
BSIE, BSCS	For Scientific, General, and technical Track: Score 50-69% in Math	N/A	Foundation Course in Math
	Literature and Islamic Tracks	N/A	Foundation Course in Math
	Commercial Track: Score 50-79%	N/A	Foundation Course in Math
BSME, BSEnE, BSIT, BSBI, BSAF	For Commercial Track: Score 50-79% in Math	N/A	Foundation Course in Math
	For Scientific, General, and technical Track: Score 50-69% in Math		
	For Science score <60%	N/A	Tutorial class in general sciences
BSIB	Score <60% in Math	N/A	Foundation Course 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 51 or above, applicant will not take remediation course in English. However, if the result is lower than 51, applicant will take remediation course in English.

b. TOEFL/IELTS

Qualified applicant who attains the score of at least 450 (paper based) or 131 (computer-based) for TOEFL, or with a score of 5.0 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 50-79% for commercial track and 50-69% 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.



For Undergraduate Transferees

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 course in English and Mathematics, the basis for evaluation whether remedial course in English and mathematics is required or not is the subject scores 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. The practicum (Internship) course is eligible for credit transfer with the same practicum (internship) course from another university or a 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.

For Postgraduate Students

Acceptance to the postgraduate 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 1.00 or 2.00 out of 4.00.
- b. The Applicant must submit two recommendation letters from his teachers in the previous institution of study.
- c. The applicant should pass the personal interview conducted by a committee consisting of a minimum of two-panel members.
- d. For an applicant who is a graduate of a baccalaureate degree (in any area of business-related course) and has a minimum CGPA of 2.75 out of 1.00 or 2.00 out of 4.00 will be exempted from taking the bridging courses:
 - provided he/she has a minimum of work experience of two years in any management-related fields.
- e. Applicant who is not a graduate of a baccalaureate degree not delivered in English:
 - he/she will take the OOPT and should get a passing score of at least 65 to proceed to core courses but if failed, he/she will proceed to foundation courses. The applicant may also present a minimum score of 49 (paper-based) and 169 (computer-based) in TOEFL or 5.5 in IELTS as an equivalent of OOPT.

For Transferees

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.



APPLICATION REQUIREMENTS

A new applicant is required to submit the following documents:

First Year Undergraduate Students

1. Completely filled-out admission application form (Online eMADA SIS or in person)
2. Original Secondary School certificate or its equivalent together with an English translation of the transcript and/or an 'A' level certification from the Ministry. Rules and regulations of HEC-Bahrain regarding the authentication of foreign certificates and/or private school certificates are to be applied when necessary.
3. One (1) recent passport-size photograph
4. A photocopy of the applicant's passport and CPR (or equivalent)
5. Official receipt of the non-refundable application fee
6. Certificate of Good Moral Character
7. Student medical examination issued by a medical health centre endorsed by HEC

First Year Postgraduate Students

1. Filled out admission application form through the eMADA-SIS or in person
2. Original Secondary School Certificate and transcript or its equivalent and/or an 'A' Level Certification from the Ministry. Rules and regulations of HEC-Bahrain regarding the authentication of foreign certificates and/or private school certificates are to be applied when necessary.
3. Official Transcript of Records for bachelor's degree or its equivalent. Rules and regulations of HEC-Bahrain regarding the authentication of foreign certificates and/or private school certificates are to be applied when necessary.
4. One recent passport-size photograph
5. A photocopy of the applicant's passport and/or CPR or at least 2 valid ID cards
6. Official receipt of the non-refundable application fee
7. Student Medical Examination issued by a medical health center endorsed by HEC
8. Two recommendation letters from the previous university

Undergraduate and Postgraduate Transferees

1. Filled out admission application form through eMADA-SIS or in person
2. Official Transcript of Records (TOR) from university previously attended. Rules and regulations of HEC-Bahrain regarding the authentication of foreign certificates and/or private school certificates are to be applied when necessary. Detailed criteria can be found in the Policies and Procedures for Credit Transfer.
3. Course description for all completed courses for which transfer credit is sought (authenticated by the originating University)
4. Certificate of Transfer from the University previously attended, if any
5. Certificate of Good Moral Character
6. One recent passport-size photograph
7. A photocopy of the applicant's passport where the name, photo, birth date, and birthplace appear.
8. A photocopy of the applicant's CPR (or equivalent)
9. Official receipt of the non-refundable application fee
10. Student Medical Examination issued by a medical health center endorsed by HEC

Foreign First Year Undergraduate Students

1. Filled out admission application form through the eMADA-SIS or in person
2. Secondary Certificate and transcript or its equivalent (A-level certificate if applicable)
3. One (1) recent passport-size photograph
4. Photocopy of the applicant's passport where the name, photo, birth date, and birthplace appear.



5. Photocopy of the applicant's CPR or equivalent
6. Authenticated copy of transcript and certificate from the originating country's Ministry of Education or Embassy and the Ministry of Foreign Affairs in Bahrain
7. The University provides student visa assistance wherein requirements are found in the UTB Student Handbook.
8. Student Medical Examination issued by a medical health center endorsed by HEC

Foreign Postgraduate Student Applicants

1. Filled out admission application form through the eMADA-SIS or in person
2. Bachelor's Certificate and transcript or its equivalent
3. One (1) recent passport-size photograph
4. Photocopy of the applicant's passport where the name, photo, birth date, and birthplace appear.
5. Photocopy of the applicant's CPR or equivalent
6. Authenticated copy of the transcript from the originating country or Embassy and the Ministry of Foreign Affairs in Bahrain
7. The University provides student visa assistance which requires international students to pay a non-refundable tuition fee equivalent to one year of registration if the visa is approved.
8. Student Medical Examination issued by a medical health center endorsed by HEC

Students with Special Need

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 student 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.

ADMISSIONS PROCEDURE

Applicants must:

1. Proceed to the Admissions Office for inquiries and secure a copy of the Application Form or download the form from the University Website.
2. Pay the non-refundable application fee.
3. Fill out the admission application form through eMADA-SIS and in person.
4. Submit all the required documents to the Admissions Office.
5. Take the Placement Tests (OOPT) on the scheduled date of exam.
6. Accepted students are officially notified by the Admissions Office.
7. Upon notification of acceptance, proceed for enlistment.
8. An applicant should submit a written request to the Admissions Office for the appeal of an admissions decision or a complaint regarding how their application has been handled.

For transfer undergraduate and post-graduate students:

1. The Admissions office initiates the Request for the Transfer of Credits through eMADA SIS.
2. The College Dean evaluates the request and determines transferable credits appropriately based on established policies for crediting courses.
3. The Admissions office Notifies the students of the credited courses.
4. The registration office will review the Evaluation of Credits and process it for approval to the Higher Education Council (HEC).



Appeals System for Access and Transfer

1. Applicant may appeal the result of his/her admission to the university by submitting a letter to the Admissions Office.
2. The Admissions Officer discusses the appeal with the College Dean and considers the merits of the appeal based on a) Results of Placement Test (OOPT) and b) Secondary School Report.
3. The college dean requests additional interviews, if necessary, and decides on the appeal with due regard to the recommendation of the College Dean.
4. The Admissions Officer advises the applicant about the result of the decision of his/her appeal and may advise the applicant to consider an alternative programme of study other than the original choice.

RE-ADMISSIONS PROCEDURE

Students who fall under the categories cited below may apply for re-admissions:

- a. Students who withdrew their enrolment from the university
- b. Students who were given dismissed notices for academic deficiencies
- c. Students who were suspended for more than one trimester for violation of student conduct
- d. Students who are on absence without leave (AWOL) or who failed to register for two (2) consecutive trimesters
- e. Students who have exceeded the maximum registration rule

A student who intends to return to the University and resume his/her studies must seek re-admission through the Registration Office. The procedure will be as follows:

For cases (a), (d), and (e)

- The student must complete the clearance for re-admissions form and secure approval from the concerned offices.
- The College Dean will evaluate the merits of the request and approve or disapprove based on established policies and requirements of the University and of the Higher Education Council (HEC).
- The College Dean assesses whether the student must be migrated to a new curriculum plan (when applicable).
- A copy of the approved clearance for admissions must be submitted to the registration office to activate and update the academic records.
- The Dean will inform and provide the student with a copy of the decision.

For cases (b) and (c)

- The student must submit an appeal letter to the Dean requesting approval for re-admissions to the University and fill out a clearance for re-admissions.
- The Dean evaluates the merits of the requests and recommends approval or disapproval.
- In case of approval, the College Dean recommends approval of the appeal to the Vice President for Academic Affairs.
- The Vice President for Academic Affairs may present the appeal to the Academic Council (if necessary), who shall deliberate on the approval or disapproval of the requests for re-admissions. A recommendation to re-admit students is submitted to the University President for approval for (c) cases.
- The Dean issues the decision letter to all students who requested re-admissions regardless of the outcome of the request.
- A copy of the decision is kept in the registration office to re-activate and update the student's records.



REGISTRATION

Registration Procedure for New Students

1. The student secures a 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 students, 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 the 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 in 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:

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

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

- The official adding/dropping of courses begins on the third day after the start of classes and runs for 3 days. The schedule is extended for dissolved courses until one week before the prelim exam.
- The schedule and procedure for adding/dropping are posted in strategic locations of the University as well as in various university manuals.
- The student initiates the request for adding/dropping subjects and can add/drop or change the class schedule during the add/drop period using their account in the eMADA-SIS.
- The student submits the accomplished adding/dropping request to the College Dean for approval. If the reason for dropping is a conflict in the work schedule, the student is required to present a certification from his/her employer as a supporting document to his/her request.
- After securing the Dean's approval, the Dean forwards the approved adding/dropping transactions to the Registration office for approval of the Registrar.
- After the approval of the Registrar, the approved add/drop transaction is confirmed, and the student's fees are automatically computed in the student's accounting ledger in the EMADA-SIS.

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 in advanced courses at the higher level unless he/she passes all the required courses at 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 in 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 provide 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 programmes and not exceed half (50%) for postgraduate programmes 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 postgraduate programmes

A postgraduate 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 postgraduate 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 a 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 reach 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 a 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.

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



IC - Incomplete. This grade shall be given at the end of the term when all, but a minor portion of the coursework has been satisfactorily completed. (e.g. missed term or final exams, no submission of a major project or research requirement, etc.)

IP - In-Progress. Conditional grades given to undergraduate students 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 8th 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 8th 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 measures that reflect their academic achievement on a trimester basis (GPA) and continuous basis (CGPA).

Computation of GPA and CGPA

Only grades in academic courses are included in the computation of either the trimester GPA or the cumulative GPA (CGPA). Any grades earned by students from previous universities (transferred) are 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 the student who shifted /changed their programme within the University, only courses that are credited 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 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 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 Guidance Counsellor no later than the last day for filing grade complaints. Students must ensure that there is a 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."

Postgraduate 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 who 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 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, 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 postgraduate student who incurs a failing mark (F) in at least one course enrolled in one term will be under academic probation.
- A postgraduate 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 postgraduate 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	Cumulative GPA of 3.90 – 4.00
Distinction with Second Class	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 postgraduate 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
6. No grade lower than B from the 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 postgraduate 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 programmes, and events at the University.

Eligibility for Degree and Graduation

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

A list of students who are candidates for graduation 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 applications 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 ensures that the courses were successfully passed with a minimum of CGPA of 2.0 (for undergraduate) and 3.0 (for postgraduate) 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 complete a clearance form and complete 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 institutional *decision-making*. Students have the right to voice 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 the Guidance Counsellor 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)



College: College of Administrative and Financial Sciences

BSBI PROGRAMME SPECIFICATION AY2022-2023

1. Teaching Institution	University of Technology Bahrain (UTB)
2. University Department	College of Administrative and Financial Sciences
3. Programme Title	Bachelor of Science in Business Informatics (BSBI)
4. Title of Final Award	Bachelor of Science in Business Informatics
5. Mode of Attendance	Actual classroom learning-interactive
6. National Qualification Framework Level and Credit	NQF Level 8 540 NQF Credits (180 ACS Credits)
7. Accreditation	European Council for Business Education Standards (ECBE)
8. Other external influences	Ministry of Education (MOE), Higher Education Council (HEC) Bahrain Education and Training Quality Authority (BQA) ACM/AIS Curriculum Guidelines QAA-UK Subject Benchmark Statement: Computing 2019 QAA-UK Subject Benchmark Statement for General Business and Management 2019 Association to Advance Collegiate Schools for Business (AACSB)
9. Date of production/revision of this specification	September 2021

10. Aims of the Programme

Programme Description

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.

Programme Educational Objectives:

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

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.
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.
3. Transfigure knowledge, understanding and academic skills through postgraduate study and/or continuing professional development.

11. Learning Outcomes, Teaching, Learning and Assessment Methods

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 of the 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. A variety of assessment tools will be used to assess the achievement of intended learning outcomes including but not limited to exams, assignments, projects, case analysis and presentations. In addition, assessments of learning outcome also include capstone, internship, and indirect assessments.



12. Programme Structure

BACHELOR OF SCIENCE IN BUSINESS INFORMATICS (BSBI) CURRICULUM PLAN EFFECTIVE AY2022-2023

REMEDIAL CLASSES

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
MATH300	Remedial Mathematics	3	0	0	
ENGL301	Speaking and listening	9	0	0	
ENGL302	Grammar and Vocabulary	9	0	0	
TOTAL				0	

FIRST YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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	
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	



SECOND YEAR
FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

THIRD YEAR
FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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 rd Year Standing
TOTAL				18	



SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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 rd Year Standing
TOTAL				18	

FOURTH YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
BSBI841	Business Ethics	3	0	3	COMP812
BSBI842	Business Informatics Internship	0	12	6	4 th 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 rd Year Standing
TOTAL				18	

ELECTIVE COURSES

MAJOR ELECTIVE 1 (Any One Course from Business Component)

Course Code	Course Title	Units	Pre-Requisites
	Business Innovation	3	
	Strategic Management	3	
	Supply Chain Management	3	

MAJOR ELECTIVE 2 and 3 (Any Two Courses from Informatics Component)

Course Code	Course Title	Units	Pre-Requisites
	Multimedia Development	3	
	Open-Source Software	3	
	Computing Trends	3	
	Accounting Information Systems	3	



13. Awards and Credits	
Degree/ Certificate Awarded	Bachelor of Science in Business Informatics
Total Units for Degree	180
Total Trimesters Completed	10
14. Personal Development Planning	
Periodic in-house training and peer mentoring related to subject specialization. Attendance of faculty members to local and international conferences, seminars and trainings related to their fields of specialization.	
15. Admission Criteria	
Refer to pages 19-24 in this document. It can be viewed online through https://www.utb.edu.bh/wp-content/uploads/2024/02/BSBI-Programme-Specification-Effective-AY2022-2023.pdf .	
16. CGPA Requirement for Graduation	
2.00/4.00	
17. Key Resources of information about the programme	
Included in the university catalogue, uploaded to 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 st 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 nd Tri	ENGL402	English Communication Skills 2	(C)								√	
	BUSI621	Organizational Behavior	(C)	√	√	√					√	√
	BUSI622	Financial Accounting 1	(C)	√	√	√	√	√				
	BUSI633	Microeconomics	(C)	√	√	√	√	√	√			
	BSBI625	Principles of Banking and Finance	(C)	√	√		√				√	
	COMP623	Business Information Systems	(C)	√	√	√	√	√			√	√
	EUTH401	Euthenics 2	(C)									
Year 1 3 rd 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 st Tri	ENGL502	Technical Writing	(C)								√	√
	MATH403	Business Statistics	(C)								√	
	BUSI711	Managerial Accounting 1	(C)	√		√	√					
	BSBI711	Bahrain Business Environment & Cross-Cultural Management	(C)	√			√			√		
	COMP711	Introduction to E-Commerce	(C)		√		√	√	√	√	√	√
	COMP712	Computer Programming 1	(C)	√	√							
Year 2 2 nd 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 3 rd 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 1 st 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)									



18. BSBI CURRICULUM SKILLS MAPPING											
Year	Course Code	Course Title	Core (C) or Option (O)	Program Intended Learning Outcomes							
Year 3 2 nd Tri	BSBI821	Operations Management	(C)	√	√		√		√	√	√
	COMP821	Information Management, Security and Support	(C)	√		√	√		√	√	√
	COMP822	Web Design and Development	(C)	√	√	√	√	√	√		
	COMP823	Project Management	(C)	√	√	√	√	√	√	√	√
	COMP824	Data Mining & Warehousing	(C)	√	√	√	√	√	√	√	√
	COMP825	FinTech	(C)			√		√		√	
Year 3 3 rd 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 st 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 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 AY2022-2023

COURSES DESCRIPTION

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH300	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.				
ENGL301	SPEAKING AND LISTENING	9	0	0
This 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 to developing the students' English macro skills with an 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.				
ENGL302	GRAMMAR AND VOCABULARY	9	0	0
This 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 to 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 of 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.				
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 academic and social challenges in college and beyond.				
MATH401	COLLEGE ALGEBRA	3	0	3
This course is designed to familiarize learners with the 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.				
BUSI615	PRINCIPLES OF MANAGEMENT	3	0	3
This is an introductory course for the study of management and the role it plays in organizations. It introduces students to the ideas of managerial levels, skills, and management 'concepts. It develops their understanding of how successful employees and managers operate. The course begins with a historical overview of the management field and evolution of management thought. Additionally, the course				



focuses on the management process/ managerial functions such as planning, organizing, leading, and controlling.				
COMP613	FUNDAMENTALS OF INFORMATION SYSTEMS	3	0	3
This course focuses on 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.				
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 roles 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.				
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.				
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.				
SOCI400	SOCIOLOGY	3	0	3
This course is designed to expose students to a detailed approach to 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.				
BUSI621	ORGANIZATIONAL BEHAVIOR	3	0	3
The course deals with a comprehensive analysis of human behavior at both individual and organizational levels. Topics include personality and attitudes, perception and attribution, motivation, communication, work stress, group and team dynamics, leadership, decision making, quality, ethics, job and organization design, conflict management, organizational culture and politics, and organizational change.				



BUSI622	FINANCIAL ACCOUNTING 1	2	2	3
This course provides students with an overview of fundamental financial accounting concepts with a focus on learning the accounting cycle from different forms of organization. Through a primary review of accounting transactions, integrated real-world examples, and a variety of practice opportunities, the course emphasis on the application of accounting principles and techniques in practice.				
BUSI633	MICROECONOMICS	3	0	3
This course introduces students to the economic analysis of decision-making, how markets work, and how consumers and firms make their decisions. The course focuses on the application of economic reasoning to a range of problems relevant for understanding the mechanisms and institutions that allocate and distribute resources. It covers rational decisions; demand and supply; the market mechanism; elasticity, efficiency, and equity.				
BSBI625	PRINCIPLES OF BANKING AND FINANCE	3	0	3
The course deals with both the 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 course enables the students to demonstrate in depth knowledge and understanding of the structure and operations of commercial banks, central banking and the operation of monetary policy, non-banking institutions, the structure of financial markets, and elements of monetary policy.				
COMP623	BUSINESS INFORMATION SYSTEMS	2	2	3
This course covers the basic and advanced concepts of information technology, its tools, and applications. It includes an MS Office package that is used for daily tasks to improve decision making and productivity. The course enables students to demonstrate a 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.				
COMP712	COMPUTER PROGRAMMING 1	2	2	3
This course covers detailed knowledge of problem solving and algorithm development, with emphasis 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, control flow and Arrays. The laboratory focuses on the implementation of programming theories and concepts in Java programming language.				
COMP723	COMPUTER PROGRAMMING 2	2	2	3
This course covers object-oriented techniques using modern fourth generation language. Topics include inheritance, method overloading, overriding, polymorphism, packages, exception handling, multithreading, file operations and Event driven programming using swing components. The laboratory focuses on the implementation of programming theories and concepts in Java programming language.				
EUTH401	EUTHENICS 2	1	0	0
This course is designed to provide 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.				



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 links it with real life problems, it also covers inferential measures and how we interpret the data for decision making.				
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.				
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 such 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.				
BUSI712	MATHEMATICS OF INVESTMENT	3	0	3
The course is a mathematical treatment of the methods used in understanding concepts, mathematical problems and solutions concerning money transactions 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 the theories and applications of simple and compound interest, annuity, stock, and bonds.				
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 emphasis on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.				
BUSI631	Principles of Marketing	3	0	3
This course focuses on the essentials of marketing, its nature and its scope that are crucially important to the organization's success in a dynamic environment. The course provides a broad background on the marketing concept, the role of marketing both within the organization and within the external environment, the marketing mix, (product, place, promotion, and price), market segmentation, targeting and positioning, consumer, and business behavior.				
BUSI632	HUMAN RESOURCE MANAGEMENT	3	0	3
This course is an introductory course for Human Resource Management (HRM); it is designed to cover the major topics and issues related to HRM, which will help the student understand and analyze the role that HRM plays in formulating and implementing organizational strategy and in achieving overall organizational efficiency and effectiveness. The course exposes students to HRM concepts, objectives,				



and functions. It also looks at diverse challenges that face HRM in its environment. Additionally, the course focuses on the scope of HRM in terms of job analysis, Human resources planning and recruiting, selection, training, and performance evaluation and appraisal.

BUSI713	MACROECONOMICS	3	0	3
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The primary focus of this course is twofold: (1) understanding the core macroeconomic concepts of growth, inflation, and unemployment – and how they are interrelated and (2) understanding how fiscal and monetary policy at both the national and international level influences these concepts. This course also covers concepts such as GDP, inflation, unemployment, usage of monetary and fiscal policies, in real world setting.

BUSI711	MANAGERIAL ACCOUNTING 1	3	0	3
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This course covers the use of accounting information for internal planning, analysis, and decision-making with a focus on information generated by internal accounting systems. It focuses on equipping students with the knowledge to prepare, understand, evaluate, and act upon the many financial and non-financial reports used in managing modern firms. Such information is a key input into a wide range of analytical tools to support decisions: analyzing the profitability of various products, managing product-line portfolios, setting prices, measuring and managing the profitability of customers, making operational and strategic decisions, evaluating investments, and investigating efficiency.

COMP711	INTRODUCTION TO E-COMMERCE	3	0	3
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This course covers the electronic commerce elements, types, models, development process, applications, services, and technologies which are used to conduct business on the World Wide Web. It focuses on the three major driving forces that permeate all aspects of e-commerce: business development and strategy, technological innovations, and the social and legal issues and impacts. It also deals with the advantages and challenges related to integrating e-commerce applications to business.

BSBI711	BAHRAIN BUSINESS ENVIRONMENT & CROSS-CULTURAL MANAGEMENT	3	0	3
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This course exposes the student to the business environment in the Kingdom of Bahrain. It covers public sector regulations and policies as well as the role of Central Bank of Bahrain in adjusting the national economy beside the contribution of Tamkeen and Labour Market Regulatory Authority to small and medium enterprises as part of Bahrain vision 2030.

ENVM400	ENVIRONMENTAL MANAGEMENT	3	0	3
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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.

BUSI721	QUANTITATIVE METHODS	3	0	3
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This course introduces the concepts and applications of quantitative methods in management. It develops mathematical and statistical competences necessary to facilitate progression in courses such as Operations Management. This course builds on the concepts and analytical tools taught in Principle of Statistics. This course focuses on developing quantitative methods, such as linear programming, sensitivity and duality theory, transportation and assignment problems, network, and queuing theory in addition to waiting line, game theory and simulation.



COMP721	DATABASE MANAGEMENT SYSTEMS	2	2	3
<p>This course provides advanced core theories and practical skills in 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 advanced concepts and techniques in database development as well as providing 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.</p>				
COMP722	HUMAN-COMPUTER INTERACTION	3	0	3
<p>The course provides detailed knowledge of 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.</p>				
ENGL502	TECHNICAL WRITING	3	0	3
<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 through 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>				
BSBI731	RESEARCH METHODS	3	0	3
<p>The course studies the scope and significance of business research. It introduces students to the various aspects of business research, its types, tools, and methods, and students will learn how to apply business research techniques to real-world situations. The course covers topics such as the identification of a topic by the student, proposition of hypothesis, formulation of research questions, development of literature review, select research design and methodologies. Additionally, students will learn data collection techniques, primary and secondary data with application to specific problems, scaling and research instrument design, and sampling design.</p>				
BSBI732	TECHNOPRENEURSHIP	3	0	3
<p>This course provides advanced concepts, facts and ideas for 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. Topics covered different types of entrepreneurships, its importance for economies, business model creation, financial evaluation and financing the start-up.</p>				



BSBI733	FINANCIAL MANAGEMENT	3	0	3
<p>This course explores the core theories, concepts, and principles of financial management used in managerial decisions. The course focuses on the analysis and application of a range of tools and techniques such as time value of money, financial statement analysis, security valuation, working capital management, and capital budgeting in obtaining and organizing relevant financial information to solve some significant current issues in management.</p>				
COMP731	SYSTEMS ANALYSIS AND DESIGN 1	2	2	3
<p>This course covers theory and practice of systems analysis and design, business requirements determination, organizational processes documentation, information flow analysis, and information systems reengineering/design. It focuses on the front-end of the system development life cycle (SDLC) by carefully examining some of the methodologies, approaches, methods, techniques, procedures, tools, and data and information used by systems analysts in the analysis and design of organizational information systems.</p>				
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 research related to 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 overall 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 components and solutions.</p>				
COMP733	MOBILE APPLICATION DEVELOPMENT	2	2	3
<p>This course provides a systematic explanation of advanced concepts in mobile programming and provides in-depth coverage of mobile systems and its application development. It includes the mobile user interface, application development standards and 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.</p>				
BUSI811	ISLAMIC BANKING AND FINANCE 1	3	0	3
<p>This course introduces students with economic rationale of Islamic values in Islamic financial system. It covers topics on the core principles and basic models of Islamic finance and establishes a framework for understanding this financial system. It examines how and why Islamic values determine the business climate. It provides a clear framework for analysing the micro- and macro-economic foundations of the Islamic system.</p>				
BSBI812	BUSINESS PROCESS MANAGEMENT	2	2	3
<p>This course introduces the process-oriented view of the flows of materials, information, products, and services through and across organizational functions. It focuses on the understanding, analyzing, designing, and documenting business processes, and continuously assessing the efficiency and effectiveness of these processes to minimize cost and maximize value creation. Students will learn how to identify information-bearing events, assess, and improve process efficiency, learn to model, and</p>				



analyze business processes using BPMN applications and related tools, and understand the interactions between human behavior and process design.				
BSBI813	BAHRAIN BUSINESS LAW AND TAXATION	3	0	3
This course covers the legal environment of international business and contracting, international and U.S. trade laws and treaties, regulation of the international marketplace, legal theories, ethical issues, and regulatory climate affecting business policies and decisions. Topics include the classification and sources of law; contracts and functions of contracts; and forms of negotiable instruments.				
COMP811	SYSTEM ANALYSIS AND DESIGN 2	2	2	3
This course is the continuation of Systems Analysis and Design 1 and covers the theory, fundamental concepts, and practical uses of software analysis and design methodologies and tools. It focuses on the object-oriented development approach, methodologies, and modelling tools, along with project management, information system planning, database design and implementation, user interface design, system implementation and maintenance, and systems security and audit. It deals with laboratory applications for designing operational projects for real-world problems.				
COMP812	IS STRATEGY, MANAGEMENT & ACQUISITION	3	0	3
This course covers the examination of the acquisition, development, and implementation of plans and policies from a management perspective. It focuses on the evaluation of IS infrastructure and systems management that support the operational and strategic requirements of the organization, as well as the creation of framework that enables organizational leaders to evaluate current information systems (IS) infrastructures, emerging technologies, and how these technologies impact organizational strategy.				
BSBI821	OPERATIONS MANAGEMENT	3	0	3
The course provides the knowledge and understanding of the efficient management of the different areas of operations as well as its processes, techniques and business practices to create the highest level of efficiency. In addition to this, the course covers the 5M's of production to include man, machine, materials, methods and money and how these factors contribute to improving productivity and quality performance in both manufacturing and service operation to retain global competitiveness and achieve customer satisfaction.				
COMP821	INFORMATION MANAGEMENT, SECURITY, AND SUPPORT	3	0	3
This course deals with the critical understanding, application, analysis and evaluation of managing information security and its principles, compliance to laws and ethical standards, governance and security strategic planning, and security policies. It concentrates on advanced conditions and situations of measures to ensure confidentiality, availability and integrity of information systems. Further, it focuses on managing risks and threats, and recommends hardware, software, and network security measures and relevant solutions to secure organizational information resources. The course also deals with the new security concepts, models, methods, and mechanisms to maintain, protect, plan and implement contingencies and disaster recovery programs to solve security-related problems.				
COMP822	WEB DESIGN AND DEVELOPMENT	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.				



COMP823	PROJECT MANAGEMENT	2	2	3
<p>This course covers the advanced processes, methods, techniques and tools that organizations use to manage projects. It focuses on a systematic methodology for initiating, planning, executing, controlling and closing projects. Drawing 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>				
COMP824	DATA MINING AND WAREHOUSING	2	2	3
<p>This course focuses on a wide spectrum of industry standard techniques using widely available databases 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 snowflakes and stars. Online Analytical Processing (OLAP) query retrieval techniques are also introduced.</p>				
COMP825	FINTECH	3	0	3
<p>This subject introduces the emerging field of Financial Technology (FinTech). It covers the fundamentals of Blockchain technology and its applications in the realms of Finance and Business. The course delves into the transformative impact of financial technologies on various stakeholders, including financial institutions, businesses, banks, and regulatory entities. Additionally, students will gain insights into alternative sources of funding for entrepreneurial ventures, such as crowdfunding and peer-to-peer lending. The overarching goal of this module is to furnish students with the knowledge and analytical skills necessary for assessing the challenges and opportunities stemming from the rapid proliferation of FinTech. Moreover, it aims to elucidate the primary categories of FinTech and their influence on financial institutions and regulatory frameworks. A key objective of this module is to present Financial Technology in an accessible manner, replete with numerous case studies and illustrative examples.</p>				
BUSI831	BUSINESS ANALYTICS	2	2	3
<p>This course provides students with the essential concepts and tools needed to understand the emerging role of business analytics in organizations. The course covers understanding, application, analysis, and evaluation of descriptive, predictive, and prescriptive data mining and analytical approaches, methods, techniques, and tools placed and practiced in a spreadsheet environment and other useful applications to develop significant insights for effective business decision making.</p>				
BSBI831	DIGITAL MARKETING	3	0	3
<p>This course explores digital marketing as a subset of a larger set of concepts and theories within the marketing discipline. Marketers make considerable use of interactive digital technologies: the Internet, interactive TV, SMS communications, electronic kiosks, etc. They do so to achieve a variety of goals: market intelligence provision, developing new business models, building customer profiles, direct and interactive communications, placing goods with customers through virtual stores, and working with customers to develop innovative new products and services. These activities present management with exciting opportunities, reveal new sources of competition and also demand a re-evaluation of core competencies. Topics in the course include digital business models and digital marketing plan, web analytics, online consumer behaviors, driving web traffic and performance metrics, conversion optimization, building a personal brand online, using analytics and data in digital marketing.</p>				
BSBI832	BUSINESS PLANNING	3	0	3
<p>This course covers business opportunities and entrepreneurial goals in terms of funding acquisition for new business venture from idea generation through business planning, funding and startup. It focuses on guiding the students in making key decisions with the aid of business analysis tools for understanding</p>				



competitive/market dynamics, developing market-entry strategy, financial tools for estimating economic viability, criteria for making decisions to start new ventures.				
BSBI833	BSBI CAPSTONE PROJECT A	3	0	3
This course integrates and applies theoretical knowledge acquired during the program to a project involving systems documentation and development. The process starts 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.				
COMP832	ENTERPRISE SYSTEMS ARCHITECTURE AND APPLICATIONS	2	2	3
The course introduces the theoretical and practical areas of Enterprise Systems (ES) such as Enterprise Resource Planning (ERP) and its strategic role in helping organizations improve their capabilities, operations, and processes. It focuses on systems integration, ES architecture, the development lifecycle, ERP implementation strategies, software, and vendor selection, its operational and post implementation, and program and project management. The course presents the evolution, components and architecture of Enterprise Systems including the benefits and drawbacks of implementing Enterprise Systems and how they can assist organizations to improve their overall efficiency.				
BSBI841	BUSINESS ETHICS	3	0	3
This course deals with the importance of ethics and its role in business and in the information technology (IT) arena. Ethical dilemmas and decision-making approaches confronting all Business Organization' Stakeholders such as leaders, managers, employees, customers and the public are explored at the societal, organizational and personal levels as well as from an IT perspective.				
BSBI842	BUSINESS INFORMATICS INTERNSHIP	6	0	6
Internship (Practicum) requires the 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 professional employees in leadership positions. In this course, the students undertake a significant experiential learning opportunity that makes them acquire knowledge in an applied work setting. The course represents an educational strategy that links classroom learning and with the actual work environment where the students undertake 240 hours of training in companies under the guidance of the practicum adviser.				
BSBI843	BSBI CAPSTONE PROJECT B	3	0	3
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.				
COMP841	CLOUD COMPUTING	3	0	3
This course introduces students to the knowledge of cloud computing including application scenarios, modes, trends, and its benefits; networking and storage technologies related to virtualization and cloud Fusion Access. This course will prepare students to take the Associate and Professional Cloud Computing certification examinations.				
Elective	BUSINESS INNOVATION	3	0	3
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 knowledge, skills and attitude to apply strategies and tactics in managing various types of business innovations.				
Elective	STRATEGIC MANAGEMENT			
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.				
Elective	SUPPLY CHAIN MANAGEMENT	3	0	3
The course covers 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.				
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.				
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.				
Elective	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 are not limited to block chain technology, nanotechnology, and Artificial Intelligence.				
Elective	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 a 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.				



College: College of Administrative and Financial Sciences

BSIB PROGRAMME SPECIFICATION AY2022-2023

1. Teaching Institution	University of Technology Bahrain (UTB)
2. University Department	College of Administrative and Financial Sciences
3. Programme Title	Bachelor of Science in International Business (BSIB)
4. Title of Final Award	Bachelor of Science in International Business
5. Mode of Attendance	Actual classroom learning-interactive
6. National Qualification Framework Level and Credit	NQF Level 8 540 NQF Credits (180 ACS Credits)
7. Accreditation	European Council for Business Education Standards (ECBE)
8. Other external influences	Ministry of Education (MOE) Higher Education Council (HEC) Bahrain Education and Training Quality Authority (BQA)QAA-UK Subject Benchmark Statement for General Business and Management 2019 Association to Advance Collegiate Schools for Business (AACSB)
9. Date of production/revision of this specification	September 2021

10. Aims of the Programme

Programme Description

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 potential leading to management positions and provides a launch pad for global careers.

Programme Educational Objectives:

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

1. Possess the relevant knowledge, skills, and entrepreneurial mindset to respond proactively and creatively to contemporary business issues and challenges of global business environment.
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.
3. Transfigure knowledge, understanding and academic skills through postgraduate study and/or continuing professional development.

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 contemporary organizations, their practices, and the major business issues to make and communicate effective decisions.
5. Formulate creative business solutions to business problems or opportunities 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 contributes 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. A variety of assessment tools will be used to assess the achievement of intended learning outcomes including but not limited to exams, assignments, projects, case analysis and presentations. In addition, assessments of learning outcome also include thesis writing, internship, and indirect assessment.



12. Programme Structure

BACHELOR OF SCIENCE IN INTERNATIONAL BUSINESS (BSIB) CURRICULUM PLAN EFFECTIVE AY2022-2023

REMEDIAL CLASSES

Course Code	Course Title	Lec Hrs	Lab Hrs	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 Hrs	Lab Hrs	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	
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				15	

SECOND YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

THIRD YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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 rd Year Standing
BSIB824	Business Research Methods	3	0	3	ENGL502 MATH403 BSIB812
BSIB825	International Finance	3	0	3	BSIB813
TOTAL				18	



THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
BUSI831	Business Analytics	2	2	3	BSIB736
BSIB831	Thesis Writing A	3	0	3	BSIB824
BSIB832	Internship	0	12	6	3 rd Year Standing
BSIB833	Elective 2	3	0	3	3 rd Year Standing
BSIB834	Elective 3	3	0	3	3 rd Year Standing
BUSI831	Business Analytics	2	2	3	BSIB736
TOTAL				21	

FOURTH YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

ELECTIVE COURSES

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
	International Business Negotiation	3	0	3	
	Strategic Leadership	3	0	3	
	International Business Trends & Seminar	3	0	3	
	Managing Quality	3	0	3	
	Islamic Banking 2	3	0	3	
	Financial Risk Management	3	0	3	

13. Awards and Credits

Degree/ Certificate Awarded	Bachelor of Science in International Business
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Total Units for Degree	180
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Total Trimesters Completed	10
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14. Personal Development Planning

Periodic in-house training and peer mentoring related to subject specialization. Attendance of faculty members at local and international conferences, seminars and training related to their fields of specialization.

15. Admission Criteria

Refer to pages 19-27 in this document.

It can be viewed online through <https://www.utb.edu.bh/wp-content/uploads/2024/02/BSIB-Programme-Specification-Effective-AY2022-2023.pdf>.

16. CGPA Requirement for Graduation

2.00/4.00

17. Key Resources of information about the programme

Included in the university catalogue, uploaded to the university website



18. BSIB CURRICULUM SKILLS MAPPING												
Year/Level	Course Code	Course Title	Core (C) or Option (O)	Program Intended Learning Outcomes								
				P1	P2	P3	P4	P5	P6	P7	P8	
Year 1 1 st 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 nd 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 rd 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 st Tri	ENGL502	Technical Writing	(C)								√	√
	ARAB400A	Arabic Language	(C)								√	
	BUSI711	Managerial Accounting 1	(C)	√		√	√					
	BUSI712	Mathematics of Investment	(C)	√		√	√					
	BUS1713	Macroeconomics	(C)	√	√	√	√	√	√			
	BSIB711	Corporate Governance and Ethics	(C)	√	√	√	√	√				
Year 2 2 nd Tri	BUSI721	Quantitative Methods	(C)	√		√	√	√			√	
	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 3 rd 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 1 st 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 2 nd 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 3 rd Tri	BUSI831	Business Analytics	(C)	√	√	√	√	√	√	√	√
	BSIB831	Thesis Writing A	(C)	√	√	√	√	√	√	√	√
	BSIB832	Internship	(C)	√	√	√	√	√	√	√	√
	BSIB833	Elective 2	(C)								
	BSIB834	Elective 3	(C)								
Year 4 2 nd 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 and Portfolio Management	(O)	√			√		√	√	√
	BSIB846	Thesis Writing B	(C)	√	√	√	√	√	√	√	√



BACHELOR OF SCIENCE IN INTERNATIONAL BUSINESS (BSIB)
CURRICULUM PLAN EFFECTIVE AY2022-2023

COURSES DESCRIPTION

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH300	REMEDIAL MATHEMATICS	0	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.				
ENGL301	SPEAKING AND LISTENING	9	0	0
This 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 to developing the students' English macro skills with an 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.				
ENGL302	GRAMMAR AND VOCABULARY	9	0	0
This 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 to 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 of 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.				
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 academic and social challenges in college and beyond.				
MATH401	COLLEGE ALGEBRA	3	0	3
This course is designed to familiarize learners with the 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.				
BUSI615	PRINCIPLES OF MANAGEMENT	3	0	3
This is an introductory course for the study of management and the role it plays in organizations. It introduces students to the ideas of managerial levels, skills, and management 'concepts. It develops their understanding of how successful employees and managers operate. The course begins with a historical overview of the management field and evolution of management thought. Additionally, the course				



focuses on the management process/ managerial functions such as planning, organizing, leading, and controlling.				
COMP613	FUNDAMENTALS OF INFORMATION SYSTEMS	3	0	3
This course focuses on 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.				
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 17 th 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.				
SOCI400	SOCIOLOGY	3	0	3
This course is designed to expose students to 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 roles 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.				
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.				
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 links it				



with real life problems, it also covers inferential measures and how we interpret the data for decision making.				
BSIB626	BUSINESS ORGANIZATION AND MANAGEMENT	3	0	3
The course exposes students to the basic concepts of the organization, its characteristics, and legal forms. It focuses on the provision of a comprehensive understanding of the organizational functions (production, marketing, finance, human resources, knowledge & information and management). Additionally, it covers the organization's relationship with the surrounding environment.				
BUSI621	ORGANIZATIONAL BEHAVIOR	3	0	3
The course deals with a comprehensive analysis of human behavior at both individual and organizational levels. Topics include personality and attitudes, perception and attribution, motivation, communication, work stress, group and team dynamics, leadership, decision making, quality, ethics, job and organization design, conflict management, organizational culture and politics, and organizational change.				
BUSI622	FINANCIAL ACCOUNTING 1	2	2	3
This course provides students with an overview of fundamental financial accounting concepts with a focus on learning the accounting cycle from different forms of organization. Through a primary review of accounting transactions, integrated real-world examples, and a variety of practice opportunities, the course emphasis on the application of accounting principles and techniques in practice.				
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.				
EUTH401	EUTHENICS 2	1	0	0
This course is designed to provide 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.				
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 emphasis on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.				
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 such 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.				
BUSI631	PRINCIPLES OF MARKETING	3	0	3
This course focuses on the essentials of marketing, its nature and its scope that are crucially important to the organization's success in a dynamic environment. The course provides a broad background on the marketing concept, the role of marketing both within the organization and within the external environment, the marketing mix, (product, place, promotion, and price), market segmentation, targeting and positioning, consumer, and business behavior.				
BSIB636	FINANCIAL ACCOUNTING 2	3	0	3
This course deals with transactions, financial statements, and problems peculiar to the operations of partnerships and corporations. It emphasizes the formations, operations, dissolution, and liquidation of partnerships, and the basic considerations in forming a corporation and stock transactions.				
BUSI632	HUMAN RESOURCE MANAGEMENT	3	0	3
This course is an introductory course for Human Resource Management (HRM); it is designed to cover the major topics and issues related to HRM, which will help the student understand and analyze the role that HRM plays in formulating and implementing organizational strategy and in achieving overall organizational efficiency and effectiveness. The course exposes students to HRM concepts, objectives, and functions. It also looks at diverse challenges that face HRM in its environment. Additionally, the course focuses on the scope of HRM in terms of job analysis, Human resources planning and recruiting, selection, training, and performance evaluation and appraisal.				
BUSI633	MICROECONOMICS	3	0	3
This course introduces students to the economic analysis of decision-making, how markets work, and how consumers and firms make their decisions. The course focuses on the application of economic reasoning to a range of problems relevant for understanding the mechanisms and institutions that allocate and distribute resources. It covers rational decisions; demand and supply; the market mechanism; elasticity, efficiency, and equity.				
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 through 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.				
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.				



BUSI711	MANAGERIAL ACCOUNTING 1	3	0	3
<p>This course covers the use of accounting information for internal planning, analysis, and decision-making with a focus on information generated by internal accounting systems. It focuses on equipping students with the knowledge to prepare, understand, evaluate, and act upon the many financial and non-financial reports used in managing modern firms. Such information is a key input into a wide range of analytical tools to support decisions: analyzing the profitability of various products, managing product-line portfolios, setting prices, measuring and managing the profitability of customers, making operational and strategic decisions, evaluating investments, and investigating efficiency.</p>				
BSIB711	ETHICS AND CORPORATE GOVERNANCE	3	0	3
<p>The course provides advanced knowledge and understanding of the core ethical dimensions of business as they relate to the various stakeholders inside and outside the organization. Topics may include business ethical theory, ethical decision making, typical dilemmas and corporate social responsibility.</p>				
BUSI712	MATHEMATICS OF INVESTMENT	3	0	3
<p>The course is a mathematical treatment of the methods used in understanding concepts, mathematical problems and solutions concerning money transactions 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 the theories and applications of simple and compound interest, annuity, stock, and bonds.</p>				
BUSI713	MACROECONOMICS	3	0	3
<p>The primary focus of this course is twofold: (1) understanding the core macroeconomic concepts of growth, inflation, and unemployment – and how they are interrelated and (2) understanding how fiscal and monetary policy at both the national and international level influences these concepts. This course also covers concepts such as GDP, inflation, unemployment, usage of monetary and fiscal policies, in real world setting.</p>				
BUSI721	QUANTITATIVE METHODS	3	0	3
<p>This course provides an introduction to the concepts and applications of quantitative methods in management. It develops mathematical and statistical competences necessary to facilitate progression in courses such as Operations Management. This course builds on the concepts and analytical tools taught in Principle of Statistics. This course focuses on developing quantitative methods, such as, linear programming, sensitivity and duality theory, transportation and assignment problems, network, and queuing theory in addition to waiting line, game theory and simulation.</p>				
ENGL503	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>				
BSIB721	CORPORATE AND BUSINESS LAW	3	0	3
<p>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.</p>				



BSIB722	MARKETING MANAGEMENT	3	0	3
<p>This course covers interrelated dynamic elements of the marketing process used in the market landscape. The course focuses on the role and reach of marketing in the business environment as well as the numerous elements and functions of marketing activities. During this course the student will learn to think like marketers and will understand how marketing managers' use marketing elements to enable the business organizations to gain a competitive advantage.</p>				
BSIB723	MANAGERIAL ACCOUNTING 2	3	0	3
<p>This course covers an advanced knowledge and understanding of the management accounting concepts and techniques for performance measurement and for decision making. Topics cover some specialist cost and managerial accounting techniques; decision-making techniques; budgeting; variance analysis; performance management systems, performance measurement, and control.</p>				
BSIB724	MANAGERIAL ECONOMICS	3	0	3
<p>This course focuses primarily on the application of economic theory with business practice, for effective corporate decision-making - such as price-setting, output-setting, advertising, product differentiation, vertical integration, and collusive behavior. In this context, both the role of competition and the determinants of market structure are emphasized.</p>				
BSIB731	INTERNATIONAL BUSINESS LAW	3	0	3
<p>This course covers the legal environment of international business and contracting, international and U.S. trade laws and treaties, regulation of the international marketplace, legal theories, ethical issues, and regulatory climate affecting business policies and decisions. Topics include the classification and sources of law; contracts and functions of contracts; and forms of negotiable instruments.</p>				
BSIB732	INTERNATIONAL ECONOMICS	3	0	3
<p>This course deals with advanced theories of International Economics in real-life situations. It focuses on comparing international trade theories, and trade models, evaluating tariffs and non-tariffs, and trade barriers. This course also highlights the causes and solutions to financial crises in emerging economies.</p>				
BSIB733	ENTREPRENEURSHIP & INNOVATION	3	0	3
<p>The course introduces students to the main concepts of innovation. Throughout the course, students will learn how innovation is crucial for both individuals and organizations. Students will be provided with various tools and methods to promote innovation capacity within themselves and others. The course will equip students with the knowledge of how to contribute as an innovative team, how innovation is managed in real work situations, and how to spread innovation culture within a business organization. The course itself draws upon real-world examples and experiences of leading organizations from around the world using case studies.</p>				
BSIB734	INTERNATIONAL BUSINESS	3	0	3
<p>The course covers a basic understanding of how to manage business across borders. Both opportunities and risks are assessed in international markets. The course will expose students to differences between domestic and international business. Several topics are covered within the course such as international business entry modes, cultural effects on both organizational and individual behaviour, economic integration schemes, firm specific and country specific elements and their impact on creating competitive advantages. Moreover, the course explores the legal, business, social, political forces, governmental regulations, labour force and competition in an international environment.</p>				



BSIB735	CORPORATE FINANCE 1	3	0	3
<p>This course explores the core theories, concepts, and principles of corporate finance used in managerial decisions. It focuses on analyzing a firm's financial performance using financial ratio analysis, discussion of time value of money (TVM) and its usage in the valuation of bonds and stocks. Additionally, the course expose students to the methods of computing a company's cash flow.</p>				
BSIB736	MANAGEMENT INFORMATION SYSTEMS	3	0	3
<p>This course provides student with an introduction to Information Systems (IS) and Information Technology (IT) and their use in an increasingly competitive business world and supports them in making decisions concerning the planning, development, and implementation of information technology resources to increase organizational effectiveness and create a strategic advantage.</p>				
FLAN501	FOREIGN LANGUAGE 1	3	0	3
<p>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.</p>				
BSIB811	STRATEGY AND INTERNATIONAL MANAGEMENT	3	0	3
<p>This course provides students with critical understanding of business firms as principal actors in a global system by integrating insights from the global manager's environment and cultural context. Global human resource functions, managing social responsibilities in international markets, organizational structure and control and global alliances are discussed in detail to provide students with a comprehensive overview of strategy formulation in international businesses.</p>				
BSIB812	CROSS CULTURAL MANAGEMENT	3	0	3
<p>This course exposes the student to the business environment in the Kingdom of Bahrain. It covers public sector regulations and policies as well as the role of Central Bank of Bahrain in adjusting the national economy beside the contribution of Tamkeen and Labour Market Regulatory Authority to small and medium enterprises as part of Bahrain vision 2030.</p>				
BSIB813	CORPORATE FINANCE 2	3	0	3
<p>This course examines advanced issues in corporate finance from the perspective of financial managers who are responsible for making significant investment and financing decisions both within the firm and in their interactions with investors. The course topics includes criteria for making investment decisions, valuation of financial assets and liabilities, relationships between risk and return, capital structure choice, payout policy, the effective use and valuation of derivative securities (futures, options, and convertible securities), and risk management.</p>				
BSIB814	LOGISTICS AND SUPPLY CHAIN MANAGEMENT	3	0	3
<p>This BSIB course explores the overview of logistics; logistics and information technology; organizational and managerial issues in logistics (including reverse logistics); the supply chain management concept; demand management; order management and customer service; inventory management; distribution center; warehouse and plant location; warehousing management; packaging and materials management; transportation and transportation management and international logistics.</p>				



BUSI811	ISLAMIC BANKING AND FINANCE 1	3	0	3
<p>This course introduces students with economic rationale of Islamic values in Islamic financial system. It covers topics on the core principles and basic models of Islamic finance and establishes a framework for understanding this financial system. 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>				
FLAN502	FOREIGN LANGUAGE 2	3	0	3
<p>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.</p>				
BSIB821	DIGITAL BUSINESS	3	0	3
<p>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.</p>				
BSIB822	INTERNATIONAL PROJECT MANAGEMENT	3	0	3
<p>This course covers the advanced processes, methods, techniques and tools that organizations use to manage projects. It focuses on a systematic methodology for initiating, planning, executing, controlling and closing projects. Drawing 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>				
BSIB824	BUSINESS RESEARCH METHODS	3	0	3
<p>The course studies the scope and significance of business research. It introduces students to the various aspects of business research, its types, tools, and methods, and students will learn how to apply business research techniques to real-world situations. The course covers topics such as the identification of a topic by the student, proposition of hypothesis, formulation of research questions, development of literature review, select research design and methodologies. Additionally, students will learn data collection techniques, primary and secondary data with application to specific problems, scaling and research instrument design, and sampling design.</p>				
BSIB825	INTERNATIONAL FINANCE	3	0	3
<p>The course provides students with knowledge of international finance that will be particularly valuable to those interested in pursuing financial management careers offered by multinational corporations. It focuses on the foreign exchange market, international parity relationship, international monetary system, forecasting foreign exchange rates, and futures and options on foreign exchange. Students will learn how to apply their knowledge to a variety of real-world problems and form their own opinions about pertinent issues arising from international trade and financial transactions.</p>				
BUSI831	BUSINESS ANALYTICS	2	2	3
<p>This course provides students with the essential concepts and tools needed to understand the emerging role of business analytics in organizations. The course covers understanding, application, analysis, and evaluation of descriptive, predictive, and prescriptive data mining and analytical approaches, methods,</p>				



techniques, and tools placed and practiced in a spreadsheet environment and other useful applications to develop significant insights for effective business decision making.				
BSIB831	THESIS WRITING A	3	0	3
This course helps students develop the entrepreneurial skills required to design, refine, and commercialize new goods and services. Students will learn to work in interdisciplinary groups across three phases of entrepreneurship: ideation, planning, and implementation. Students in this initiative learn through experiencing the idea-to-venture process in an educational environment that is hardwired to encourage the development of original, inventive, and commercially viable ventures.				
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.				
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.				
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.				
BSIB843	GLOBAL MARKETING STRATEGY	3	0	3
The course covers the core theories, concepts and principles of marketing as applied to the global environment. It acknowledges the international similarities and differences in marketing functions as related to the marketing environment. The course emphasizes understanding and applying cultural differences, unique product needs, and pertinent changes in marketing across international borders.				
BSIB844	GLOBAL SUPPLY CHAIN MANAGEMENT	3	0	3
This BSIB course explores the fundamental principle of Supply Chain and logistics. The supply chain management concept: green supply chain, challenges faced by supply chain organization; order management and customer service; warehouse and plant location; warehousing management; packaging and materials management; transportation and transportation management, international logistics and supply chain network.				
BSIB845	GLOBAL INVESTMENT AND PORTFOLIO MANAGEMENT	2	2	3
This course examines the investment process and portfolio management's critical concepts and their applications in the global financial market. Hence, the course will allow the student to acquire professional-level skills in creating and managing their investment portfolios based on a combination of specialized methods in analyzing, evaluating, and applying fundamental and technical indicators.				



BSIB846	THESIS WRITING B	3	0	3
This course is a continuation of Entrepreneurship Program A. It provides an overview of entrepreneurship and planning new business ventures for aspiring entrepreneurs and managers. The objective is to create and present a high-quality business plan for a new venture using market research and financial analytical techniques.				
Elective	INTERNATIONAL BUSINESS NEGOTIATION	3	0	3
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.				
Elective	STRATEGIC LEADERSHIP	3	0	3
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 encounter in managing organizations as well as the exploration of one's own strengths and weaknesses.				
Elective	INTERNATIONAL BUSINESS TRENDS & SEMINAR	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 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.				
Elective	MANAGING QUALITY	3	0	3
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 advanced knowledge on the process of total quality management.				
Elective	ISLAMIC BANKING AND FINANCE 2	3	0	3
This course provides students with deeper details of the Islamic Banking functions and products and tools available to investors, which enables students to formulate methods and strategies to identify solutions to Islamic banking finance problems and challenges. The major focus is on Islamic banking products like Islamic banking Retail Products of Vehicle, Machine and home finance (Ijara, Murabaha and diminishing Musharaka), Sukuk fund management, basis of Takaful compared to other conventional insurance.				
Elective	FINANCIAL RISK MANAGEMENT	3	0	3
This course provides the student with the different types of risks faced by corporations and frameworks for assessing and mitigating those risks. It aims to cover topics on instruments such as options, futures, pricing and hedging. This course also aims to introduce skills needed to get ready for a career in the banking and finance industry.				



College: College of Administrative and Financial Sciences

BSAF PROGRAMME SPECIFICATION AY2022-2023

1. Teaching Institution	University of Technology Bahrain (UTB)
2. University Department	College of Administrative and Financial Sciences
3. Programme Title	Bachelor of Science in Accounting and Finance (BSAF)
4. Title of Final Award	Bachelor of Science in Accounting and Finance (BSAF)
5. Mode of Attendance	Actual classroom learning-interactive
6. National Qualification Framework Level and Credit	NQF Level 8 540 NQF Credits (180 ACS Credits)
7. Accreditation	European Council for Business Education Standards (ECBE)
8. Other external influences	Ministry of Education (MOE) Higher Education Council (HEC) Bahrain Education and Training Quality Authority (BQA) International Accounting Education Standards Board Association of Chartered Certified Accountants (ACCA) QAA-UK 2019 Subject Benchmark Statement for Accounting Association to Advance Collegiate Schools for Business (AACSB)
9. Date of production/revision of this specification	September 2022

10. Aims of the Programme

Programme Description

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 a 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.

Programme Educational Objectives:

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

1. Demonstrate technical competence, professional skills, and professional values, ethics and attitude that enable them to make positive contributions 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 detailed knowledge and understanding of principles, conventions, concepts, theories and empirical evidence related to accounting, finance and other key functional areas of business.
2. Apply principles, standards, concepts, facts, and procedures on accounting and non-accounting information to perform financial, audit and taxation functions and/prepare related reports.

3. Relate and adapt theories, concepts, principles, tools, techniques, and emerging technologies using specialized skills to provide in-depth and creative business solutions to different aspects of accounting, finance and business operations.
4. Critically evaluate/process information from reliable sources and perspective through research & analysis, statistics, and integrations when making decisions.
5. Use technology, analytical tools, and quantitative skills to manipulate data, evaluate, estimate, interpret, and model business problems, functions, and phenomena to solve problems in the dynamic global business environment.
6. Communicate information, ideas, problems, and problems related to accounting, finance, with high degree of proficiency verbally and/or in writing for the intended audience.
7. Demonstrate a capacity to lead a group and/or manage projects showing high ethical standards needed for reporting of financial and accounting information.

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. A variety of assessment tools will be used to assess the achievement of intended learning outcomes including but not limited to exams, assignments, projects, case analysis and presentations. In addition, assessments of learning outcome also include thesis writing, internship, and indirect assessment.



12. Programme Structure

BACHELOR OF SCIENCE IN ACCOUNTING AND FINANCE (BSAF) CURRICULUM PLAN EFFECTIVE AY2022-2023

REMEDIAL CLASSES

Course Code	Course Title	Lec Hrs	Lab Hrs	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 Hrs	Lab Hrs	Units	Pre-Requisites
ENGL611	English Communication Skills1	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	
ACC600	Fundamentals of Accounting	3	0	3	
SOCI600	Sociology	3	0	3	
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
MGT604	Business & Technology 1	3	0	3	
ACC601	Financial Accounting 1	3	0	3	ACC600
HIST600	History of Bahrain and GCC Region	3	0	3	
MGT603	Organizational Behavior	3	0	3	BSIB626
QM601	Business Statistics	3	0	3	MATH611
ECO601	Microeconomics	3	0	3	
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
MGT605	Business & Technology 2	3	0	3	MGT604
ACC602	Financial Accounting 2	3	0	3	ACC601
ACC603	Management Accounting 1	3	0	3	
HUMR600	Human Rights	3	0	3	SOCI600
ARAB600	Arabic Language	3	0	3	
TOTAL				18	

SECOND YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
MGT703	Business & Technology 3	3	0	3	MGT605
ACC704	Management Accounting 2	3	0	3	ACC603
FIN711	Introduction to FinTech	3	0	3	
ENGL701	Business Communication	3	0	3	ENGL611



COMP721	Database Management Systems	2	2	3	COMP613
ECO602	Macroeconomics	3	0	3	ECO601
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
ACC705	Management Accounting 3	3	0	3	ACC704
MGT704	Corporate Business Law 1	3	0	3	
FIN702	Financial Management 1	3	0	3	ACC602
QM711	Data Visualization	3	0	3	QM601
FIN712	Sustainability for Finance	3	0	3	
ECO711	Money & Banking	3	0	3	ECO602
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
MGT705	Corporate Business Law 2	3	0	3	MGT704
FIN703	Financial Management 2	3	0	3	FIN702
ACC707	Financial Reporting 1	3	0	3	ACC602
ACC706	Performance Management 1	3	0	3	ACC705
FIN713	Digital Innovation and Finance 1	3	0	3	FIN711
QM712	Data Analytics	3	0	3	QM711
TOTAL				18	

THIRD YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
FIN804	Financial Management 3	3	0	3	FIN703
ACC807	Performance Management 2	3	0	3	ACC706
ACC806	Financial Reporting 2	3		3	ACC707
FIN814	International Finance	3	0	3	
FIN815	Digital Innovation and Finance 2	3	0	3	FIN713
FIN816	Islamic Banking and Finance	3	0	3	
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
MGT801	Tax 1	3	0	3	MGT705
MGT803	Audit and Assurance 1	3	0	3	
MGT811	Risk Management & Insurance	3	0	3	
QM813	Data Mining	3	0	3	QM601
FIN810 or FIN811 or FIN812	Elective 1	2	2	3	3rd Year Standing
QM811	Business Research Methods	3	0	3	QM601
TOTAL				18	



THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
MGT802	Tax 2	3	0	3	MGT801
MGT804	Audit and Assurance 2	3	0	3	MGT803
ACC811	International Financial Reporting Standards (IFRS)	3		3	ACC806
QM814	Business Intelligence	3		3	QM813
ACC812	Internship	6		6	Completion of 144 credit hours
TOTAL				18	

FOURTH YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
MGT805	Tax 3	3	0	3	MGT802
ACC813 OR ACC814 OR ACC815	Elective 2	3	0	3	
MGT812	Ethics and Professional Skills	3	0	3	
FIN817 OR FIN818 OR FIN819	Elective 3	3	0	3	
PROJ801	Project	6	0	6	
TOTAL				18	

ELECTIVE COURSES

	Domains	Course Code	Course Title (Any three (3) among the following electives)	Units
Elective 1	Electives (Finance)	FIN810	Personal Finance	3
		FIN811	Derivative Securities	3
		FIN812	Real Estate Finance	3
Elective 2	Electives (Accounts)	ACC813	Accounting for Islamic Financial Institutions	3
		ACC814	Governmental Accounting	3
		ACC815	Cloud Accounting	3
Elective 3	Electives (Fintech)	FIN817	Computers and Business Information Systems	3
		FIN818	Financial Planning and Software Applications	3
		FIN819	Blockchain & Crypto Currencies	3



13. Awards and Credits	
Degree/ Certificate Awarded	Bachelor of Science in Accounting and Finance
Total Units for Degree	180
Total Trimesters Completed	10
14. Personal Development Planning	
<ol style="list-style-type: none"> 1. Periodic in-house training and peer mentoring related to subject specialization. 2. Attendance of faculty members at 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	
Refer to pages 19-24 in this document. It can be viewed online through https://www.utb.edu.bh/wp-content/uploads/2024/02/BSAF-Programme-Specification-Effective-AY2022-2023.pdf .	
16. CGPA Requirement for Graduation	
2.00/4.00	
17. Key Resources of information about the programme	
Included in the university catalogue, uploaded to the university website	

18. BSAF Curriculum Skills Mapping										
Year/ Level	Course Code	Course Title	Core (C) Option (O)	Programme Intended Learning Outcomes						
				P1	P2	P3	P4	P5	P6	P7
Year 1 1 st 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	✓				✓		✓
Year 1 2 nd Tri	MGT604	Business & Technology 1	C	✓						
	ACC601	Financial Accounting 1	C	✓	✓					
	HIST600	History of Bahrain and the GCC Region	C							
	MGT603	Organizational Behavior	C	✓						
	QM601	Business Statistics	C				✓			
	ECO601	Microeconomics	C	✓		✓		✓		
Year 1 3 rd Tri	MGT605	Business & Technology 2	C	✓						
	ACC602	Financial Accounting 2	C	✓	✓					
	ACC603	Management Accounting 1	C	✓	✓					
	HUMR600	Human Rights	C						✓	✓
	ARAB600	Arabic Language	C						✓	✓
	MKT601	Principles of Marketing	C	✓						
Year 2	MGT703	Business & Technology 3	C	✓				✓		
	ACC704	Management Accounting 2	C	✓	✓					



18. BSAF Curriculum Skills Mapping										
Year/ Level	Course Code	Course Title	Core (C) Option (O)	Programme Intended Learning Outcomes						
				P1	P2	P3	P4	P5	P6	P7
1 ST Tri	FIN711	Introduction to FinTech	C					✓		
	ENGL701	Business Communication	C						✓	✓
	COMP721	Database Management Systems	C					✓		
	ECO602	Macroeconomics	C	✓	✓		✓			
Year 2 2 ND Tri	ACC705	Management Accounting 3	C	✓	✓					
	MGT704	Corporate Business Law 1	C	✓	✓					
	FIN702	Financial Management 1	C	✓	✓					
	QM711	Data Visualization	C				✓	✓		
	FIN712	Sustainability for Finance	C		✓					
Year 2 3 RD Tri	ECO711	Money & Banking	C	✓			✓			
	MGT705	Corporate Business Law 2	C	✓					✓	✓
	FIN703	Financial Management 2	C	✓	✓			✓		
	ACC705	Financial Reporting 1	C		✓					✓
	ACC706	Performance Management 1	C		✓		✓			
	FIN713	Digital Innovation and Finance 1 (ACCA Micro accreditation)	C			✓		✓	✓	✓
Year 3 1 ST Tri	QM712	Data Analytics (ACCA Micro accreditation)	C					✓	✓	✓
	FIN804	Financial Management 3	C	✓	✓					
	ACC807	Performance Management 2	C		✓				✓	
	ACC806	Financial Reporting 2	C		✓					✓
	FIN814	International Finance	C		✓		✓			
	FIN815	Digital Innovation and Finance 2	C			✓		✓		
Year 3 2 ND Tri	FIN816	Islamic Banking and Finance	C		✓				✓	
	MGT801	Tax 1	C		✓					
	MGT803	Audit and Assurance 1	C		✓					
	MGT811	Risk Management & Insurance	C			✓				
	QM813	Data Mining	C			✓		✓		
		Elective 1	C	✓			✓			
Year 3 3 RD Tri	QM811	Business Research Methods	C		✓				✓	✓
	MGT802	Tax 2	C		✓					
	MGT804	Audit and Assurance 2	C		✓					
	ACC811	International Financial Reporting Standards (IFRS)	C		✓				✓	
	QM814	Business Intelligence	C			✓			✓	
Year 4 1 ST Tri	ACC812	Internship	C	✓						✓
	MGT803	Tax 3	C		✓					
		Elective 3	C	✓				✓		
	MGT812	Ethics and Professional Skills	C							✓
	Elective 2	C	✓			✓		✓		



18. BSAF Curriculum Skills Mapping										
Year/ Level	Course Code	Course Title	Core (C) Option (O)	Programme Intended Learning Outcomes						
				P1	P2	P3	P4	P5	P6	P7
		Project	C	✓	✓	✓	✓	✓	✓	✓
Electives	FIN817	Computers and Business Information Systems	O							
	FIN818	Financial Planning and Software Applications	O							
	FIN819	Blockchain & Crypto currencies	O							
	ACC813	Accounting for Islamic Financial Institutions	O							
	ACC814	Governmental Accounting	O							
	ACC815	Cloud Accounting	O							
	FIN810	Personal Finance	O							
	FIN811	Derivative Securities	O							
	FIN812	Real Estate finance	O							



BACHELOR OF SCIENCE IN ACCOUNTING AND FINANCE (BSAF)
CURRICULUM PLAN EFFECTIVE AY2022-2023

COURSES DESCRIPTION

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH300	REMEDIAL MATHEMATICS	0	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.				
ENGL301	SPEAKING AND LISTENING	9	0	0
This 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 to developing the students' English macro skills with an 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.				
ENGL302	GRAMMAR AND VOCABULARY	9	0	0
This 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 to 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 of 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.				
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.				
MATH611	COLLEGE ALGEBRA	3	0	3
This course is designed to familiarize learners with the 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.				
BSIB626	BUSINESS ORGANIZATION AND MANAGEMENT	3	0	3
This course demonstrates in-depth understanding of the theoretical concepts of business structure, its stakeholders, the external environment and governance and social responsibility of management. Detailed content includes the factors of business for example, micro and macro factors, political, social, technological, competitive, and environmental factors, governance and social responsibility of management, business structure, culture and types of business organizations.				



COMP613	FUNDAMENTALS OF INFORMATION SYSTEMS	3	0	3
This course focuses on 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.				
BSAF600	FUNDAMENTALS OF ACCOUNTING	3	0	3
This course deals with detailed knowledge and understanding of the accounting scope and purpose of financial statements for external reporting, users' and stakeholders' needs, the main elements of financial reports, the regulatory framework (legislation and regulation, reasons and limitations, relevance of accounting standards), duties and responsibilities of those charged with governance, the qualitative characteristics of financial information and the use of double-entry accounting system.				
SOCI600	SOCIOLOGY	3	0	3
This course is designed to expose students to a detailed approach to 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.				
MGT605	BUSINESS & TECHNOLOGY 1	3	0	3
This course is specifically designed to cover the partial module of ACCA Business & Technology subject. Detail of the topics are as follows: The relationship between accounting and other business functions, Accounting and finance functions within business organizations, Principles of law and regulation governing accounting and auditing, The sources and purpose of internal and external financial information, provided by business, financial systems, procedures and related IT applications.				
ACC601	FINANCIAL ACCOUNTING 1	3	0	3
This course is specifically designed to cover the partial module of ACCA financial accounting. The detail of the topics includes the followings: sales and purchases, cash, inventory, tangible non-current assets, depreciation, intangible non-current assets and amortization, accruals and prepayments, receivables and payables, provisions and contingencies, capital structure and finance costs, trial balance, correction of errors, control accounts and reconciliations, bank reconciliations and suspense accounts.				
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 th 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.				
MGT603	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.					
QM601	BUSINESS STATISTICS		3	0	3
In this course, the students are introduced to the subject of business statistics to include the need for quantitative analysis in business, the basic procedures in problem solving, and the sources and types of data used by business firms using business application software. Basic probability concepts and normal probability distribution are used by the student to solve real world business problems which involve business applications, Review of probability concepts; Probability functions and distributions; Statistical estimation; Tests of significance; Hypothesis tests of population means, proportions and variances; Analysis of variance; multiple linear regression analysis; Time series analysis.					
ECO601	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 focus 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 a deep understanding of the micro economic principles and its methods as well as tools to understand micro units of economy.					
MGT605	BUSINESS & TECHNOLOGY 2		3	0	3
This course is specifically designed to cover the partial module of ACCA business and technology subject, internal controls, authorization, security of data and compliance within business, fraud and fraudulent behaviour and their prevention in business, including money laundering, the impact of financial technology (Fintech) on accounting systems, leadership, management and supervision, recruitment and selection of employees, individual and group behaviour in business organizations, and team formation, development and management.					
ACC602	FINANCIAL ACCOUNTING 2		3	0	3
This course is specifically designed to cover the partial module of ACCA Financial Accounting. Detail of the topics are as follows: Statements of financial position, Statements of profit or loss and other comprehensive income, Disclosure notes, Events after the reporting period, Statements of cash flows, Incomplete records, subsidiaries, associates, importance and purpose of analysis of financial statements, ratios, and analysis of financial statements.					
ACC603	MANAGEMENT ACCOUNTING 1		3	0	3
Content of this course is designed as per the applied knowledge of ACCA managerial accounting module. Details of the topics are as follows: accounting for management, sources of data, cost classification, presenting information, sampling methods, forecasting techniques, summarizing and analyzing data and spreadsheets.					
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 such 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.					



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.				
MKT601	PRINCIPLES OF MARKETING	3	0	3
The course demonstrates detailed knowledge and understanding of the principles and practices of modern marketing. It emphasizes the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services that satisfy individual and organizational objectives.				
MGT703	BUSINESS & TECHNOLOGY 3	3	0	3
This course is specifically designed to cover the partial module of ACCA Business & Technology subject. Detail of the topics are as follows: Motivating individuals and groups, Learning and training at work, Review and appraisal of individual performance, Fundamental principles of ethical behaviour, The role of regulatory and professional bodies in promoting ethical and professional standards in the accountancy profession, corporate codes of ethics and Ethical conflicts and dilemmas.				
ACC704	MANAGEMENT ACCOUNTING 2	3	0	3
Content of this course is designed as per the applied knowledge of ACCA Managerial accounting Module. Detail of topics are as follows: Accounting for material, labor, and overheads, Absorption and marginal costing, Cost accounting methods, Alternative cost accounting principles Budgeting, Nature and purpose of budgeting, Budget preparation, Flexible budgets, Capital budgeting and discounted cash flow, Budgetary control and reporting and Behavioral aspects of budgeting.				
FIN711	INTRODUCTION TO FINTECH	3	0	3
In this course will explore the major areas of FinTech including, beginning with What is FinTech before turning to Money, Payment and Emerging Technologies, Digital Finance and Alternative Finance, FinTech Regulation and RegTech, Data and Security, and the Future of Data Driven Finance, as well as the core technologies driving FinTech including Blockchain, AI and Big Data.				
ENGL701	BUSINESS COMMUNICATION	3	0	3
An overview of effective business communication skills and their direct relationship to workplace success. Emphasis is placed on the planning, organizing, composing, and revising of business documents such as letters, memos, reports, and emails. Presentation skills, professional behavior in the workplace, and current communication technologies are included with an emphasis on real world problem solving. Digital communication topics include presentation software, emails, business-relevant social media, and mobile technologies.				
COMP721	DATABASE MANAGEMENT SYSTEMS	2	2	3
This course provides the core theories principles topics of database management systems. The topics include introduction to 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.				
ECO602	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 an advanced understanding of circular flow, inflation, unemployment, nominal GDP and real GDP, aggregate demand, and aggregate				



supply. The course builds advanced skills to analyze macroeconomic policies, such as fiscal and monetary policies. It enables students to apply macroeconomics tools to real world economic policy.				
ACC705	MANAGEMENT ACCOUNTING 3	3	0	3
Content of this course is designed as per the applied knowledge of ACCA Managerial accounting Module. Detail of the topics are as follows: Standard costing system, Variance calculations and analysis, Reconciliation of budgeted and actual profit, Performance measurement-overview, Performance measurement- application, Cost reductions and value enhancement, and Monitoring performance and reporting.				
MGT704	CORPORATE BUSINESS LAW 1	3	0	3
This course is specifically designed to cover the partial module of ACCA Corporate and Business Law. This course will emphasize on both international and local (Bahrain) law. Detail of the topics are as follows: Law and the legal system, Source of law, Formation of contract, Content of contracts, Breach of contract and remedies, The law of torts and professional negligence, Contract of employment, Dismissal and redundancy, Agency law, Partnerships, Corporations and legal personality and the formation and constitution of a company.				
FIN702	FINANCIAL MANAGEMENT 1	3	0	3
Content of this course is designed as per the applied knowledge of ACCA Financial Management Module. Detail of the topics are as follows: The nature and purpose of financial management, Financial objectives and relationship with corporate strategy, Stakeholders and impact on corporate objectives, Financial and other objectives in not-for-profit organizations, The economic environment for business, The nature and role of financial markets and institutions, The nature and role of money markets, The nature, elements and importance of working capital, Management of inventories, accounts receivable, accounts payable and cash, Determining working capital needs and funding strategies.				
QM711	DATA VISUALIZATION	3	0	3
This course designed to deliver the following concepts: Introduction to data visualization; Data for data graphics; Tableau introduction Design principles; Categorical, time series, and statistical data graphics; Storytelling; Multivariate displays, Geospatial displays, Dashboards, interactive and animated Displays; Project presentations.				
FIN712	SUSTAINABILITY FOR FINANCE	3	0	3
This course introduces students to sustainable finance. In this course, sustainable finance is understood as the process of ensuring the inclusion of environmental, social, and governance (ESG) considerations into corporate decisions. A sustainable corporation will make their investment decisions that consider not only financial returns but also its social impact. Students will learn the origins, terms, drivers and trends in sustainable finance, major sustainability challenges faced by societies worldwide and how they are being addressed at the international level and local level. As well as students will be able to integrate ESG methodologies and solutions in financial decision making.				
ECO711	MONEY & BANKING	3	0	3
The course deals with both theoretical and practical concerns related to today's financial and banking 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 risks. This course will also explore the practical aspects of money and banking within the economy. Emphasis is given to the changing role of financial institutions as well as new financial instruments.				



MGT705	CORPORATE BUSINESS LAW 2	3	0	3
<p>This course is specifically designed to cover the partial module of ACCA Corporate and Business Law. This course will emphasize on both international and local (Bahrain) law. Details of the topics are as follows: Share capital, Loan capital, Capital maintenance and dividend law, Company directors, Other company officers, Company meetings and resolutions, Insolvency and administration, Fraudulent and criminal behaviour.</p>				
FIN703	FINANCIAL MANAGEMENT 2	3	0	3
<p>Content of this course is designed as per the applied knowledge of ACCA Financial Management Module. Detail of the topics are as follows: Investment appraisal techniques, Allowing for inflation and taxation in DCF, Adjusting for risk and uncertainty in investment appraisal, Specific investment decisions (lease or buy; asset replacement, capital rationing), Sources of, and raising, business finance, Estimating the cost of capital, Sources of finance and their relative costs, Capital structure theories and practical considerations, and Finance for Small and Medium-size Entities (SMEs).</p>				
ACC705	FINANCIAL REPORTING 1	3	0	3
<p>Content of this course is designed as per the applied knowledge of ACCA Financial reporting Module. Detail of the topics are as follows: The need for a conceptual framework and the characteristics of useful information, recognition and measurement, regulatory framework, the concepts, and principles of groups and consolidated financial statements, tangible non-current assets, intangible assets, impairment of assets, inventory and biological assets, financial instruments, and leasing.</p>				
ACC706	PERFORMANCE MANAGEMENT 1	3	0	3
<p>This course is specifically designed to cover the applied knowledge of ACCA performance management Module. Detail of the topics are as follows: Managing information, Sources of information, Information systems and data analytics, Activity-based costing, Target costing, Life-cycle costing, Throughput accounting, Environmental accounting, Relevant cost analysis, Cost volume profit analysis and Limiting factors.</p>				
FIN713	DIGITAL INNOVATION AND FINANCE 1	3	0	3
<p>Digital Innovation for Finance is aimed at accountancy, finance, business and advisory professionals who wish to develop their knowledge, skills and awareness of innovations in digital technology and their impact on the finance profession. This course provides an opportunity to develop these broader technology skills, with the curriculum aligning closely to key insights from our report - The digital accountant - focusing on emerging technologies, future disruptors and digital transformation.</p>				
QM712	DATA ANALYTICS	3	0	3
<p>Data Analytics is aimed at business professionals who wish to develop their understanding of data, and the skills and techniques available for data analytics. Using real practical business examples, learners can develop an understanding of how data analytics and data modelling can be used to garner business insights. Learners will learn about big data, the various sources of data, types of analytics, and become familiar with the range of tools and techniques required to extract, manipulate, interpret, and present data. They'll also learn about the need to be both skeptical and ethical when working in the data analytics field.</p>				
FIN804	FINANCIAL MANAGEMENT 3	3	0	3
<p>Content of this course is designed as per the applied knowledge of ACCA Financial Management Module. Detail of the topics are as follows: Nature and purpose of the valuation of business and financial assets, Models for the valuation of shares, The valuation of debt and other financial assets, Efficient market hypothesis (EMH) and practical considerations in the valuation of shares, The nature and types of risk</p>				



and approaches to risk management Causes of exchange rate differences and interest rate fluctuations, Hedging techniques for foreign currency risk, and Hedging techniques for interest rate risk.

ACC807	PERFORMANCE MANAGEMENT 2	3	0	3
This course is specifically designed to cover the applied knowledge of ACCA performance management Module. Detail of the topics are as follows: Pricing decisions, Make-or-buy and other short-term decisions, Dealing with risk and uncertainty in decision-making, Budgetary systems and types of budget, Quantitative analysis in budgeting, Standard costing, Material mix and yield variances, Sales mix and quantity variances, Planning and operational variances, Performance analysis in private sector organisations, Divisional performance and transfer pricing, Performance analysis in not-for-profit organisations and the public sector, External considerations and the impact on performance.				
ACC806	FINANCIAL REPORTING 2	3	0	3
Content of this course is designed as per the applied knowledge of ACCA Financial reporting Module. Detail of the topics are as follows: Provisions and events after the reporting period, Taxation, Reporting financial performance, Revenue, Government grants, Foreign currency transactions, Limitations of financial statements, Calculation and interpretation of accounting ratios and trends to address users' and stakeholders' needs, Limitation of interpretation techniques, Specialized, not-for-profit, and public sector entities, Preparation of single entity financial statements, and Preparation of consolidated financial statements, including an associate.				
FIN814	INTERNATIONAL FINANCE	3	0	3
This course covers issues related to both international financial markets and the financial operations of the firm within the international environment. Management of currency risk and political risk of multinational companies will be discussed. Evaluation of international projects and raising money in global markets along with optimal management of corporate funds internally in a differential tax environment will be discussed.				
FIN815	DIGITAL INNOVATION AND FINANCE 2	3	0	3
Digital Innovation for Finance is aimed at accountancy, finance, business, and advisory professionals who wish to develop their knowledge, skills and awareness of innovations in digital technology and their impact on the finance profession. This course provides an opportunity to develop these broader technology skills, with the curriculum aligning closely to key insights from our report - The digital accountant - focusing on emerging technologies, future disruptors and digital transformation.				
FIN816	ISLAMIC BANKING AND FINANCE	3	0	3
This course introduces students with economic rationale of Islamic values in Islamic financial system. It covers topics on the core principles and basic models of Islamic finance and establishes a framework for understanding this financial system. 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.				
MGT801	TAX 1	3	0	3
This course is specifically designed to cover the partial module of ACCA Tax subject. This course will emphasize on both U.K. and local (Bahrain) Tax system with the blend of international taxation system. Detail of the topics are as follows: The overall function and purpose of taxation in a modern economy, Principal sources of revenue law and practice, The systems for self-assessment and the making of returns, The time limits for the submission of information, claims, and payment of tax, including payments on account, The procedures relating to compliance checks, appeals, and disputes, Penalties for non-compliance, The scope of income tax, Income from employment, Income from self-employment, Property and investment income, The comprehensive computation of taxable income and income tax				



liability, National insurance contributions for employed and self-employed persons, The use of exemptions and reliefs in deferring and minimizing income tax liabilities.				
MGT803	AUDIT AND ASSURANCE 1	3	0	3
This course is specifically designed to cover the partial module of ACCA Audit and Assurance subject. Detail of the topics are as follows: The concept of audit and other assurance engagements, External audits, Corporate governance, Professional ethics and ACCA's Code of Ethics and Conduct, Obtaining, accepting, and continuing audit engagements, Objective and general principles, Assessing audit risks, Understanding the entity and its environment Fraud, laws, and regulations, Audit planning and documentation, Internal control systems, The use and evaluation of internal control systems by auditors, Tests of control and Communication on internal control.				
MGT811	RISK MANAGEMENT & INSURANCE	3	0	3
This course develops an understanding of what risk is, and the main structure of risk models and how it can be measured, why it is interested in individuals at risk, and why the companies at risk. The application of the risk management process to two main areas of concern for companies: the risk of liability and financial risks. However, the insurance section discusses the fundamental knowledge of insurance comparing, including the required economic theory of insurance corporations, insurance classification scheme, the insurance environment, insurance in risk management, and the main risk factors affecting the insurance companies. In addition, to the legal framework of insurance corporation, and the functions of insurance companies.				
QM813	DATA MINING	3	0	3
Advanced data analysis techniques; nature and purpose of Data Mining (DM); the relationship between DM and data warehousing; design issues related to DM tools; data processing techniques; classification and predictions; clustering; DM applications.				
QM811	BUSINESS RESEARCH METHODS	3	0	3
The course covers the core principles and methods applicable in doing business research in accounting. It helps students 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 in meaningful business research. The student develops advanced skills of communication, collaboration, and information management.				
MGT802	TAX 2	2	2	3
This course is specifically designed to cover the partial module of ACCA Tax subject. This course will emphasize on both U.K. and local (Bahrain) Tax system with the blend of international taxation system. Detail of the topics are as follows: The scope of the taxation of capital gains, The basic principles of computing gains and losses, Gains and losses on the disposal of movable and immovable property, Gains and losses on the disposal of shares and securities, The computation of capital gains tax, The use of exemptions and reliefs in deferring and minimising tax liabilities arising on the disposal of capital assets, The basic principles of computing transfers of value, The liabilities arising on chargeable lifetime transfers and on the death of an individual, The use of exemptions in deferring and minimising inheritance tax liabilities, Payment of inheritance tax, The scope of inheritance tax, and The basic principles of computing transfers of value.				
MGT804	AUDIT AND ASSURANCE 2			
This course is specifically designed to cover the partial module of ACCA Audit and Assurance subject. Details of the topics are as follows: This course is specifically designed to cover the partial module of ACCA Audit and Assurance subject. Detail of the topics are as follows: Internal audit and governance and the differences between external audit and internal audit, The scope of the internal audit function,				



outsourcing and internal audit assignments, Financial statement assertions and audit evidence, Audit procedures, Audit sampling and other means of testing, The audit of specific items, Automated tools and techniques, The work of others, Not-for-profit organisations, Subsequent events, Going concern, Written representations, Audit finalization and the final review, The Independent Auditor's Report, and The Independent Auditor's Report.				
ACC811	INTERNATIONAL FINANCIAL REPORTING STANDARDS (IFRS)	3	0	3
This course will deliver the basic knowledge about Introduction to IASB, IAS and IFRS. The IFRS and its Conceptual framework; IAS 1 (revised): presentation of financial statements; IAS 16: property, plant and equipment; IAS 36: Impairment of assets, IAS 41: Agriculture; IAS 18: Revenues (Including IAS11); IFRS 8: Operating segments and IFRS 13: Measurement of fair value. This course will enable students to critically evaluate the financial reports as per the IFRS.				
QM814	BUSINESS INTELLIGENCE	2	2	3
Business Intelligence (BI) is a set of architectures, theories, methodologies and technologies that transform structured, semi-structured and unstructured data into meaningful and useful information. This course will include the following concepts: Business Intelligence (BI) components; BI technologies; data gathering; storing; accessing and analysis; BI application to the organization; data quality and validity; data privacy and security; data warehousing; analytical reporting; data visualization; ethical and legal issues.				
	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.				
MGT803	TAX 3	3	0	3
This course is specifically designed to cover the partial module of ACCA Tax subject. This course will emphasize on both U.K. and local (Bahrain) Tax system with the blend of international taxation system. Detail of the topics are as follows: The liabilities arising on chargeable lifetime transfers and on the death of an individual, The use of exemptions in deferring and minimising inheritance tax liabilities, Payment of inheritance tax, The scope of corporation tax, Taxable total profits, Chargeable gains for companies, The comprehensive computation of corporation tax liability, The effect of a group corporate structure for corporation tax purposes, The use of exemptions and reliefs in deferring and minimising corporation tax liabilities, The VAT registration requirements, The computation of VAT liabilities, and The effect of special schemes.				
MGT812	ETHICS AND PROFESSIONAL SKILLS	3	0	3
This course is designed to provide a strong foundation for professional development of our students to operate in a complex global environment. Students will develop an understanding of the importance and contribution of ethical practices in wider organisational contexts. In addition, students will focus on enhancing their inter and intra-personal communication skills. The course adopts a multiple perspectives approach which encourages students to develop these skills. This course will cover the following topics. In depth analysis and foresight needed to overcome the complex ethical challenges; contemporary and controversial ethical issues facing the business community, morale reasoning, moral dilemmas, equity, justice and fairness, ethical standards and moral development.				
FIN817	COMPUTERS AND BUSINESS INFORMATION SYSTEMS	2	1	3
This course provides an in-depth exploration of the role of computers and information systems in modern business environments. Students will gain foundational knowledge in computer hardware,				



software applications, networking, and data management while exploring their application to business processes. Topics include information system design, database management, e-commerce technologies, security protocols, and emerging trends in digital business. Through hands-on projects and case studies, students will develop practical skills to analyze, design, and implement information systems to solve real-world business challenges.				
FIN818	FINANCIAL PLANNING AND SOFTWARE APPLICATIONS	2	1	3
This course provides students with essential knowledge and skills of computerized business applications and presents different applications of IS for solving business problems of organizations. Topics covered include applications of business in accounting, marketing and other business fields such as Accounting Information System (AIS), IT for finance, IT for human resources, and IT for public relations.				
FIN819	BLOCKCHAIN & CRYPTO CURRENCIES	2	1	3
This course covers the core fundamentals of how cryptocurrencies work—who uses them, what level of security they have, and how they are different from traditional hard currencies, as well as how Bitcoin originated and why it is becoming a global phenomenon. The course also provides a broad overview of the essential concepts of blockchain, realities of Cryptocurrency, the intricacies of Blockchain technology, and an effective strategy for incorporating Cryptocurrency into investment plans.				
ACC813	ACCOUNTING FOR ISLAMIC FINANCIAL INSTITUTIONS	3	0	3
This course is intended to introduce students to accounting concepts for Islamic financial transaction and responsibility from the Qur'an and Sunnah. The course would show the need for Islamic accounting and the limitations of conventional accounting. The course will enhance students' opportunity to learn about accounting standards developed by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) and understand the relevant international accounting and reporting standards and their implications for IFIs.				
ACC814	GOVERNMENTAL ACCOUNTING	2	1	3
This course covers accounting principles, concepts, and practices in municipal and other governmental units with emphasis on fund accounts. The related budgetary and encumbrance procedures are included. The use of fund and financial accounting principles and practices relative to non-profit hospitals, colleges/universities, and associations receive particular attention.				
ACC815	CLOUD ACCOUNTING	2	1	3
The course 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.				
FIN810	PERSONAL FINANCE	3	0	3
This course is designed to help students understand the impact of individual choices on occupational goals and future earnings potential. Using simulations such as Virtual Business Personal Finance students will experience real world scenarios and use strategies covered in the course to help them make sound financial decisions. Students will design personal and household budgets; simulate use of checking and saving accounts; demonstrate knowledge of finance, debt, and credit management; evaluate and understand insurance and taxes. This course will provide a foundational understanding for making informed personal financial decisions.				
FIN811	DERIVATIVE SECURITIES	3	0	3
This module introduces different financial derivative contracts available in the market, develops pricing techniques and risk management tools to manage risks associated with a portfolio of derivative				



contracts. Outline syllabus includes: An introduction to derivatives, futures and forward, options and trading strategies, binomial tree model, Black-Scholes option pricing formula, Greeks and derivative risk management, numerical techniques, exotic options, interest rate models and interest rate derivatives, credit risk and credit derivatives.

FIN812	REAL ESTATE FINANCE	3	0	3
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This course presents the fundamental concepts of real estate finance. The course provides a framework for understanding the flow of funds into various real estate markets and financing costs can be calculated and evaluated. The course will provide students with practical knowledge of various financing options, their costs and benefits, and introduce the financial analysis of real estate investments.



College: College of Administrative and Financial Sciences

MBA PROGRAMME SPECIFICATION AY2022-2023

1. Teaching Institution	University of Technology Bahrain
2. University Department	College of Administrative and Financial Sciences
3. Programme Title	Master of Business Administration (MBA)
4. Title of Final Award	Master of Business Administration
5. Modes of Attendance offered	Actual classroom learning-interactive
6. National Qualification Framework Level and Credit	NQF Level 9 126 NQF Credits (42 ACS Credits)
7. Accreditation	European Council for Business Education (ECBE)
8. Other external influences	<p>Local External Influence / Reference</p> <p>Ministry of Education (MOE), Higher Education Council (HEC) Education and Training Quality Authority (BQA)</p> <p>International External Influence / Reference</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>
9. Date of production/revision of this specification	September, 2021
10. Aims of the Programme	
<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>Programme Educational Objectives</p> <p>Upon completion of the programme, MBA graduates will be able to:</p> <ol style="list-style-type: none"> 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 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. 	
11. Learning Outcomes, Teaching, Learning and Assessment Methods	
<p>Upon successful completion of the programme, the student will be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate critical knowledge and understanding of the key functional areas of business that are 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. A variety of assessment tools will be used to assess achievement of intended learning outcomes including but not limited to tests, exams, assignments, case analysis, presentations, projects and thesis.



18. Programme Structure

MASTER OF BUSINESS ADMINISTRATION (MBA) CURRICULUM PLAN EFFECTIVE AY2022-2023

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
Total Units		(12)

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
Total Units		12

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
Total Units		12

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
Total Units		12

SECOND YEAR -FIRST TRIMESTER

(Thesis Writing 06 units)

Course Code	Course Title	Units
MBAT999	Thesis Writing (2 trimester minimum; 3 trimesters maximum)	6



Total Units	06
GRAND TOTAL Units	42

List of Elective Courses: <i>choose any two (2)</i>	Units
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

13. Awards and Credits	
Degree/ Certificate Awarded	Master of Business Administration (MBA)
Total Units for Degree	42
Total Trimesters Completed	5 trimesters
14. Personal Development Planning	
<ol style="list-style-type: none"> 1. Conduct in-house trainings and seminars related to all functional areas of management, and the current trends and updates in the business 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 forums. 	
15. Admission Criteria	
<p>Acceptance to the postgraduate program as a new student depends on the following criteria:</p> <ol style="list-style-type: none"> 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. The Applicant must submit two recommendation letters from his teachers in the previous institution of study. c. The applicant should pass the personal interview conducted by a committee consisting of a minimum of two-panel members. d. For an applicant who is a graduate of a baccalaureate degree (in any area of business-related course) and has a minimum CGPA of 2.75 out of 4.00 or 2.00 out of 4.00 will be exempted from taking the bridging courses: e. An applicant who is a graduate with a baccalaureate degree in the -business field and is applying and has a minimum CGPA of 2.75 out of 4.00 or 2.00 out of 4.00 will be exempted from taking the bridging courses <ul style="list-style-type: none"> • provided he/she has a minimum of work experience of two years in any management-related fields. f. Applicant who is not a graduate of a baccalaureate degree not delivered in English: <ul style="list-style-type: none"> • he/she will take the OOPT and should get a passing score of at least 65 to proceed to core courses but if failed, he/she will proceed to foundation courses. The applicant may also present a 	



minimum score of 490 paper–paper-based) and 169 computer-based) in TOEFL or 5.5 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.

It can also be viewed online through <https://www.utb.edu.bh/wp-content/uploads/2024/02/MBA-Programme-Specifications-Effective-AY2022-2023.pdf>.

16. CGPA Requirement for Graduation

3:00 / 4:00

17. Key Resources of information about the programme

Included in the University Catalogue, uploaded to the university website

18.		MBA Curriculum Skills Map						
Course Code	Course Title	Core (C) or Elective (E)	PIOs					
			P1	P2	P3	P4	P5	
CORE COURSES and CILO MAPPING TO PILO								
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	√	√	√	√		
ELECTIVE COURSES: (ANY TWO)								
	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	√	√	√	√	√	



MASTER OF BUSINESS ADMINISTRATION (MBA)
CURRICULUM PLAN EFFECTIVE AY2022-2023

COURSES DESCRIPTION

Course Code	Course Title	Lec Hrs.	Lab Hrs	Units
PMBA801	INTRODUCTION TO MANAGEMENT	3	0	3
<p>This course deals with the study of principles and foundations of management and organizations. The course covers management activities dealing with strategic management and decision-making processes, 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.</p>				
PMBA802	QUANTITATIVE METHODS FOR BUSINESS	3	0	3
<p>The course focuses on advanced analytical methods that help executives make sound decisions 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.</p>				
PMBA803	SURVEY OF ECONOMICS	3	0	3
<p>This course covers survey of both micro and macroeconomic concepts. Microeconomics topics include scarcity, positive and normative economics, economic problems, demand and supply mechanism, elasticity and market structure. Macroeconomics topics include national accounts, unemployment, business cycles, inflation, money, banking and monetary and fiscal policies.</p>				
PMBA804	FINANCIAL ACCOUNTING	3	0	3
<p>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.</p>				
CMBA910	STRATEGIC MANAGEMENT	3	0	3
<p>This course critically analyzes, evaluates and/or synthesizes drivers of effective, innovative and sustainable business strategy in organizations in contexts 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.</p>				
CMBA912	MANAGERIAL ACCOUNTING	3	0	3
<p>This course emphasizes the use of financial and accounting data as a management tool for managerial control and decision-making processes. It covers the 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.</p>				



CMBA913	MARKETING MANAGEMENT	3	0	3
<p>This course critically analyzes the role of comprehensive marketing plans within an organization. It focuses on the design and integration of 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, market 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.</p>				
CMBA914	CORPORATE GOVERNANCE AND ETHICS	3	0	3
<p>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 with 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.</p>				
CMBA921	HUMAN RESOURCE MANAGEMENT	3	0	3
<p>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.</p>				
CMBA922	MANAGERIAL FINANCE	3	0	3
<p>The course requires 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 bonds, capital budgeting techniques and the risk and return on investments.</p>				
CMBA923	INNOVATION AND ENTREPRENEURSHIP	3	0	3
<p>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).</p>				
CMBA924	MANAGEMENT INFORMATION SYSTEMS	3	0	3
<p>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 systems 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.</p>				
CMBA931	BUSINESS RESEARCH METHODS	3	0	3
<p>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.</p>				



CMBA932	STATISTICS AND DECISION TOOLS	3	0	3
<p>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.</p>				
	DATA MINING AND BUSINESS ANALYTICS	3	0	3
<p>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.</p>				
	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>				
	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>				
	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>				
	ORGANIZATIONAL CHANGE AND DEVELOPMENT	3	0	3
<p>This course deals with the advanced 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 with the necessary abilities and competencies to create and design an OD intervention.</p>				
	BUSINESS LAW	3	0	3
<p>This course is designed to help students analyze the legal environment in which a business operates. Topics include a general overview of the nature of business law and its relationship to business ethics,</p>				



laws on business organizations, law on contracts, and negotiable instruments law. This course enables students to draft and formulate legal contracts and commercial papers.				
E- BUSINESS		3	0	3
This course deals with the advanced electronic business and describes information technologies and web services that improve the productivity of a business. The course includes examples of best practices and real-world examples. In addition, the course covers the basics of electronic business, forms of electronic commerce, electronic data interchange, electronic payment systems, electronic business options and opportunities, electronic business security concerns, and legal and ethical issues.				
MANAGERIAL ECONOMICS		3	0	3
This course exposes 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.				
MBAT999	<p style="text-align: center;"> THESIS WRITING (Minimum 2 trimesters; Maximum 3 trimesters) </p>	6	0	6
This thesis 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.				



College: College of Computer Studies

BSCS PROGRAMME SPECIFICATION AY2022-2023

1. Teaching Institution	University of Technology Bahrain
2. University Department	College of Computer Studies
3. Programme Title	Bachelor of science in Computer Science (BSCS)
4. Title of Final Award	Bachelor of science in Computer Science
5. Mode of Attendance offered	Actual classroom learning-interactive
6. National Qualification Framework Level and Credit	NQF Level 8 594 NQF Credits (198 ACS Credits)
7. Accreditation	Computing Accreditation Commission (CAC)- Accreditation Board for Engineering and Technology (ABET)
8. Other external influences	<p>Local External Influences/References Ministry of Education (MOE), Higher Education Council (HEC) National Authority of Qualifications and Quality Assurance for Education and Training (NAQQAET)</p> <p>International External Influences/References Accreditation Board for Engineering and Technology (ABET) Association in Computing Machineries (ACM) in Computing Bologna Framework</p>
9. Date of production/revision of this specification	September 1, 2023
10. Aims of the Programme	
<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, web technologies, data analytics, artificial intelligence, mobile application development, cloud computing, and elective courses.</p> <p>Programme Educational Objectives: The objectives of Computer Science programme are to produce graduates who will be able to:</p> <ol style="list-style-type: none"> 1. Apply knowledge to effectively analyze and assess real life problems to develop economically viable and socially acceptable computing 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 computer 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	
<ol style="list-style-type: none"> 1. Analyze a complex computing problem and 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 problems. Active participation of the students' 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 (3) 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 Computing problems, discuss the algorithm of the problems, and present the solution in class.
- Discovery-based learning- Students will be given experiments to work on 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.
- Experiential learning- Engaging students to hands on experience which attempts to apply theories and knowledge learned in the classroom to real-world situations.

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 written examinations, assignments, case analysis, written reports, software demonstration and computer program/software development project/programming exercises, presentations, projects and thesis.



19. Programme Structure

BACHELOR OF SCIENCE IN COMPUTER SCIENCE (BSCS)

CURRICULUM PLAN EFFECTIVE AY2022-2023

REMEDIAL CLASSES

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
MATH500	Remedial Mathematics	3	0	0	
ENGL500	English Foundation Course	12	0	0	

FIRST YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI617	Introduction to Computing	2	2	3	
ENGL611	English Communication Skills 1	3	0	3	
ARAB600	Arabic Language	3	0	3	
EUTH500	Euthenics	1	0	0	
MATH631	Calculus 1	5	0	5	
HIST600	History of Bahrain and GCC Region	3	0	3	
TOTAL				17	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI626	Ethics for Computing	2	0	2	CSCI617
CSCI627	Computer Programming 1	2	2	3	CSCI617
ENGL621	English Communication Skills 2	3	0	3	ENGL611
HUMR600	Human Rights	3	0	3	
CHEM611	General Chemistry	2	2	3	
MATH711	Calculus 2	5	0	5	MATH623
TOTAL				19	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI628	Multimedia Development	2	2	3	CSCI617
CSCI638	Digital logic Design	2	2	3	MATH622
CSCI639	Computer Programming 2	2	2	3	CSCI627
ENGL631	Speech and Oral Communication	2	2	3	ENGL621
MATH622	Discrete Mathematics	3	0	3	MATH611
PHYS711	University physics	2	2	3	
TOTAL				18	

SECOND YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI711	Data Structures	2	2	3	CSCI639
CSCI712	Green Computing	3	0	3	CSCI617



ENGL711	Technical Writing	3	0	3	ENGL621
ACCT600	Introduction to Financial Accounting	2	2	3	MATH631
MATH722	Advanced Mathematics	2	2	3	MATH711
PHYS711	University Physics 2	2	2	3	PHYS711
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI721	Object-Oriented Programming	2	2	3	CSCI711
CSCI722	Database Management Systems 1	2	2	3	CSCI711
CSCI723	Computer Organization and Architecture	2	2	3	CSCI638
CSCI724	Web Technologies 1	2	2	3	CSCI639
CSCI725	Introduction to Data Science	2	2	3	CSCI711
MATH621	Probability and Statistics	3	0	3	MATH622
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI731	Computer Networks 1	2	2	3	CSCI723
CSCI732	Database Management Systems 2	2	2	3	CSCI722
CSCI733	System Analysis and Design	2	2	3	CSCI722
CSCI734	Algorithm Analysis and Design	3	0	3	CSCI711
CSCI735	Automata and Formal Languages	3	0	3	MATH622
MATH732	Numerical Methods and Analysis	2	2	3	MATH621
TOTAL				18	

THIRD YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI811	Computer Graphics	2	2	3	CSCI721
CSCI812	Operating System	2	2	3	CSCI723
CSCI813	Computer Networks 2	2	2	3	CSCI731
CSCI814	Visual Programming	2	2	3	CSCI733
CSCI815	Fundamentals of Cryptography	2	2	3	CSCI731
MATH733	Linear Algebra	2	2	3	MATH732
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI821	Theory of Programming Languages	2	2	3	CSCI732
CSCI822	Statistical Analysis and Data Mining	2	2	3	CSCI732
CSCI823	Software Engineering	2	2	3	CSCI733
CSCI824	Web Technologies 2	2	2	3	CSCI724
CSCI825	Human Computer Interaction	3	0	3	CSCI733
MATH821	Optimization Methods	3	0	3	MATH732
TOTAL				18	



THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI831	Software Quality Assurance	3	0	3	CSCI733
CSCI832	Parallel and Distributed Computing	2	2	3	CSCI813
CSCI833	Software Project Management	2	2	3	CSCI733
CSCI834	Cyber Security	2	2	3	CSCI813
CSCI835	Cloud Computing	2	2	3	CSCI813
CSCI880	Elective 1	2	2	3	CSCI825 CSCI813
TOTAL				18	

FOURTH YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI841	Mobile Application Development	2	2	3	CSCI825
CSCI842	Internship	0	0	6	CSCI833
CSCI843	Software Project A	3	0	3	CSCI833
CSCI844	Ethical Hacking	2	2	3	CSCI813
CSCI881	Free Elective	3	0	3	
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI851	Big data Analytics	2	2	3	CSCI823
CSCI852	Artificial Intelligence and Machine Learning	2	2	3	CSCI821
CSCI853	Software Project B	0	6	3	CSCI843
CSCI854	Special Topics in Computing	3	0	3	CSCI835
CSCI855	Technopreneurship	3	0	3	CSCI824
CSCI882	Elective 2	2	2	3	CSCI833, CSCI831
TOTAL				18	
GRAND TOTAL				198	

ELECTIVE COURSES

MAJOR ELECTIVE 1

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI880a	AR VR Tech	2	2	3	CSCI825, CSCI813
CSCI880b	Software Analysis and Testing Tools	2	2	3	
CSCI880c	Embedded System	2	2	3	

MAJOR ELECTIVE 2

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSCI882a	Internet of Things	2	2	3	CSCI834, CSCI831
CSCI882b	Wireless and Mobile Networks	2	2	3	
CSCI882c	E-Commerce Infrastructure and Application	3	0	3	



13. Awards and Credits	
Degree/ Certificate Awarded	Bachelor's Degree
Total Units for Degree	198
Total Trimesters Completed	11
14. Personal Development Planning	
<ol style="list-style-type: none"> 1. Conduct in-house training and seminars on current trends in computing, particularly on Cloud Computing, Artificial Intelligence, Data Analytics, Mobile Application Development etc. 2. Send faculty members to local and international conferences, seminars and training related to their field 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. 	
15. Admission Criteria	
Refer to pages 19-24 in this document.	
It can be viewed online through https://www.utb.edu.bh/wp-content/uploads/2023/09/BSCS-Programme-Specification-Effective-AY-2022-2023.pdf .	
16. CGPA Requirement for Graduation	
The required CGPA for an undergraduate student to be eligible for graduation is 2.0 out of 4.	
17. Key Resources of information about the programme	
Included in the University Catalogue, uploaded to the UTB website	

18.		BSCS 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	CSCI617	Introduction to Computing	(C)	√		√		√		
	ENGL611	English Communication Skills1	(C)			√				
	ARAB600	Arabic Language	(C)				√			
	EUTH500	Euthenics	(C)							
	MATH631	Calculus 1	(C)	√						
	HIST600	History of Bahrain and GCC Region	(C)				√			
	CSCI626	Ethics for Computing	(C)			√	√			
Year 1 2nd Tri	CSCI627	Computer Programming1	(C)	√	√				√	
	ENGL621	English Communication Skills2	(C)			√				
	HUMR600	Human Rights	(C)				√			
	CHEM611	General Chemistry	(C)	√				√		
	MATH711	Calculus 2	(C)	√						
	CSCI628	Multimedia Development	(C)		√			√		
Year 1 3rd Tri	CSCI638	Digital logic Design	(C)	√	√					
	CSCI639	Computer Programming2	(C)	√	√				√	



18. BSCS 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
	ENGL631	Speech and Oral Communication	(C)			√				
	MATH622	Discrete Mathematics	(C)	√						
	PHYS631	University Physics1	(C)	√						
Year 2 1st Tri	CSCI711	Data Structures	(C)	√	√				√	
	CSCI712	Green Computing	(C)	√			√	√		
	ENGL711	Technical Writing	(C)			√				
	ACCT600	Introduction to Financial Accounting	(C)	√						
	MATH722	Advanced Mathematics	(C)	√						
	PHYS711	University Physics2	(C)	√						
Year 2 2nd Tri	CSCI721	Object-Oriented Programming	(C)	√	√				√	
	CSCI722	Database Management Systems 1	(C)	√	√			√	√	
	CSCI723	Computer Organization and Architecture	(C)	√	√					
	CSCI724	Web Technologies 1	(C)	√	√			√	√	
	CSCI725	Introduction to Data Science	(C)	√	√				√	
	MATH721	Probability and Statistics	(C)	√						
Year 2 3rd Tri	CSCI734	Computer Networks 1	(C)	√	√				√	
	CSCI732	Database Management Systems 2	(C)	√	√			√	√	
	CSCI733	System Analysis and Design	(C)	√	√	√		√	√	
	CSCI731	Algorithm Analysis and Design	(C)	√	√					
	CSCI735	Automata and Formal Languages	(C)	√	√					
	MATH732	Numerical Methods and Analysis	(C)	√						
Year 3 1st Tri	CSCI811	Computer Graphics	(C)	√	√			√		
	CSCI812	Operating System	(C)	√	√					
	CSCI813	Computer Networks 2	(C)	√	√				√	
	CSCI814	Visual Programming	(C)	√	√	√		√	√	
	CSCI815	Fundamentals of Cryptography	(C)	√	√					
	MATH733	Linear Algebra	(C)	√						
Year 3 2nd Tri	CSCI821	Theory of Programming Languages	(C)	√	√					
	CSCI822	Statistical Analysis and Data Mining	(C)	√				√	√	
	CSCI823	Software Engineering	(C)	√	√	√		√	√	
	CSCI824	Web Technologies 2	(C)	√	√	√		√	√	
	CSCI825	Human Computer interaction	(E)	√				√		



18. BSCS 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 3 3rd Tri	CSCI831	Software Quality Assurance	(C)	√	√					
	CSCI832	Parallel and Distributed Computing	(C)	√			√	√		
	CSCI833	Software Project Management	(C)	√	√				√	
	CSCI834	Cyber security	(C)	√			√	√		
	CSCI835	Cloud Computing	(C)	√	√		√			
	CSCI880	Elective 1	(C)	√	√			√		
Year 4 1st Tri	CSCI841	Mobile Application Development	(E)	√	√	√		√	√	
	CSCI842	Internship	(C)	√	√	√		√	√	
	CSCI843	Software Project A	(C)	√	√	√	√	√	√	
	CSCI844	Ethical Hacking	(C)	√		√	√	√		
	CSCI881	Free Elective	(C)	√			√			
	CSCI851	Bigdata Analytics	(E)	√						
Year 4 2nd Tri	CSCI852	Artificial Intelligence and Machine Learning	(C)	√	√	√		√	√	
	CSCI853	Software Project B	(C)	√		√		√	√	
	CSCI854	Special Topics in Computing	(C)	√	√	√	√	√	√	
	CSCI855	Technopreneurship	(C)	√			√	√		
	CSCI882	Elective 2	(C)	√		√		√		
		ELECTIVE								
	CSCI881a	AR VR Tech	(E)	√	√			√		
	CSCI881b	Software Analysis and Testing Tools	(E)	√	√			√		
	CSCI881c	Embedded System	(E)	√	√			√		
	CSCI882a	Internet of Things	(E)	√	√			√		
CSCI882b	Wireless and Mobile Network	(E)	√	√			√			
CSCI882c	E-Commerce Infrastructure And Application	(E)	√	√			√			



BACHELOR OF SCIENCE IN COMPUTER SCIENCE (BSCS)
CURRICULUM PLAN EFFECTIVE AY2022-2023

COURSES DESCRIPTION

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
CSCI617	INTRODUCTION TO COMPUTING	2	2	3
<p>This course covers a detailed knowledge and understanding of computer hardware and software. It includes the discussion of number systems, networking and the internet and the interdisciplinary science of computing. It also provides a discussion of programme development structures, algorithm and flowchart development. The laboratory delivers practices in Microsoft 365 Apps, configuring web browsers security, configuring E-mail security, configuring OS security.</p>				
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>				
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>				
EUTH500	EUTHENICS	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 roles 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.</p>				
MATH631	CALCULUS 1	5	0	5
<p>This is the first calculus course in a series of three calculus courses which deals with conic section, limits, continuity, differentiation and integration, applications of the derivative to determine the shape of the graphs, evaluation of limits by the L'Hopital Rule, finding the maximum and the minimum values of functions including problems of finding rates. The course ends with the introduction of indefinite and definite integrals by parts, u-substitution and application of area problems.</p>				
HIST600	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</p>				



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.				
CSCI627	COMPUTER PROGRAMMING 1	2	2	3
This course covers detailed knowledge of problem solving and algorithm development, with emphasis 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 programming theories and concepts in Java programming language.				
CSCI628	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, and underlying techniques of incorporating multiple media, compression and sharing. Students will learn to apply the art of visual communication using 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.				
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.				
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 such 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.				
CHEM611	GENERAL CHEMISTRY	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.				
MATH622	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 propositions, predicates, proofs, sets, relations, functions, graphs and trees. It simplifies and evaluates basic logic statements including compound statements, implications, inverses, converses, and contrapositives using truth table and the properties of logic.				



CSCI626	ETHICS FOR COMPUTING	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.				
CSCI638	DIGITAL LOGIC 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.				
CSCI639	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 implementation of programming theories and concepts in Java programming language.				
ENGL631	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 suprasegmental features of speech, specifically sentential stress, and intonation. Further, it incorporates the mechanics and techniques of speech craft and delivery with emphasis on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.				
MATH711	CALCULUS 2	5	0	5
This is the second course from a sequence of three calculus courses. The course is an enhancement on the topics taught in Calculus I, which contained primarily on the applications of integration such as calculating volumes, lengths of curves and surface area, the techniques of integration of various functions, and proper and improper integrals. It also deals with sequences, series and their convergence, powers series and their convergence including differentiating and integrating power series. The course ends with the topics on the introduction of polar coordinate system, polar curves and some basic polar calculus.				
PHYS711	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.				
CSCI711	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 hash tables. 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 structures like trees and graphs using array and linked list.				



CSCI712	GREEN COMPUTING	3	0	3
<p>This course empowers students to reduce 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.</p>				
ENGL711	TECHNICAL WRITING	3	0	3
<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 through 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>				
ACCT600	INTRODUCTION TO FINANCIAL ACCOUNTING	2	2	3
<p>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.</p>				
MATH722	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>				
PHYS722	UNIVERSITY PHYSICS 2	2	2	3
<p>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.</p>				
CSCI721	OBJECT ORIENTED PROGRAMMING	2	2	3
<p>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 Object Oriented Concepts.</p>				
CSCI722	DATABASE MANAGEMENT SYSTEM 1	2	2	3
<p>This course provides advanced core theories and practical skills in 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 advanced concepts and techniques in database development as well as providing a foundation for research in databases. The</p>				



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.				
CSCI723	COMPUTER ORGANIZATION AND ARCHITECTURE	2	2	3
This course integrates 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 their programming languages. It also explains the internal organization of a computer system and interrupts operations through Assembly language instruction. Through laboratory and in-course project, the students will creatively implement complex applications of microprocessor-based systems using Assembly language.				
CSCI724	WEB TECHNOLOGIES 1	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.				
CSCI725	INTRODUCTION TO 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.				
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).				
CSCI731	COMPUTER NETWORKS 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.				
CSCI732	DATABASE MANAGEMENT SYSTEM 2	2	2	3
This course covers advanced and critical issues of database management systems. Topics include storage systems, transaction management, concurrency control, database architecture, Blockchain databases and database administration. The laboratory focuses on training the students with hands-on experience with advanced PL/SQL using Oracle. Moreover, it focuses on administrative level commands.				



CSCI733	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 on using UML using various tools.				
CSC734	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 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.				
CSCI735	AUTOMATA AND FORMAL LANGUAGES	3	0	3
This course covers the advanced concept of computability and mathematical models, such as finite automata, grammar 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.				
MATH732	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 a tool in solving problems in Numerical Analysis.				
CSCI811	COMPUTER GRAPHICS	2	2	3
This course covers the advanced technologies underlying the generation and display of images using computer graphics algorithms. Topics include Geometric primitives its attributes and implementations, 2D and 3D transformations and Viewing and Computer Animation. The laboratory focuses on providing practical experience by using Graphic tools to understand, realize and implement the concepts, theories and models learnt in the lectures.				
CSCI812	OPERATING SYSTEM	2	2	3
This course provides advanced and detailed information about the components and functionalities of an operating system. 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 the laboratory, the various operating system commands are illustrated using Windows and Linux Operating Systems. scheduling, memory management and page replacement algorithms are implemented using Java.				
CSCI813	COMPUTER NETWORKS 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.				
CSCI814	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. The course also provides a brief introduction to ASP.Net. The laboratory focuses on training the students with hands-on experience on Visual Studio.Net. The students will gain skills in Visual programming using the Integrated Development Environment (IDE) Visual Studio.				
CSCI815	FUNDAMENTALS OF CRYPTOGRAPHY	2	2	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 advanced encryption/decryption algorithm. It also discusses 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.				
MATH733	LINEAR ALGEBRA	2	2	3
This course uses 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 used as mathematical software and solutions to a variety of mathematical problems are determined.				
CSCI821	THEORY OF PROGRAMMING LANGUAGES	2	2	3
This course covers the rigorous comprehensive study of programming languages and the various concepts which will provide students with a strong foundation in different programming languages. The topics includes 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 various flavors of programming languages.				
CSCI822	STATISTICAL ANALYSIS AND DATA MINING	2	2	3
This course provides an in-depth study of the field of statistical analysis and data mining as it relates to real-world applications. The 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 and R data mining tools and using that perform preprocessing, classifications and clustering based on real word data sets.				
CSCI823	SOFTWARE ENGINEERING	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 processes, project management,				



<p>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.</p>				
CSCI824	WEB TECHNOLOGIES 2	2	2	3
<p>This course focuses on dynamic database-driven Web site development. It covers more advanced tools and techniques for designing web sites using current web design and development tools. It also includes client-and-server-side scripting, maintaining persistent information on the Web, user-interface design concepts, client-side and server-side technologies, Web Site Management with Content Management Systems (CMS) and Web databases. The laboratory focuses on implementing a Web Application using tools such as PHP, MySQL, PostgreSQL, Apache and AJAX.</p>				
CSCI825	HUMAN COMPUTER INTERACTION	3		3
<p>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.</p>				
MATH821	OPTIMIZATION METHODS	3	0	3
<p>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.</p>				
CSCI831	SOFTWARE QUALITY ASSURANCE	3	0	3
<p>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.</p>				
CSCI832	PARALLEL AND DISTRIBUTED COMPUTING	2	2	3
<p>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 architecture, grid computing, and peer-to-peer computing. The Laboratory exercises will be used to demonstrate various aspects of parallel and distributed computing using MS MPI.</p>				
CSCI833	SOFTWARE PROJECT MANAGEMENT	2	2	3
<p>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</p>				



approaches to maintenance and long-term software development. In the laboratory focuses on training the students with hands-on experience on project management tools.				
CSCI834	CYBER SECURITY	2	2	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.				
CSCI835	CLOUD COMPUTING	2	2	3
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 describing concepts and technologies.				
CSCI841	MOBILE APPLICATION DEVELOPMENT	2	2	3
This course provides a systematic explanation of advanced concepts in mobile programming and provides in-depth coverage of mobile systems and its application development. It includes the mobile user interface, application development standards and 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.				
CSCI842	INTERNSHIP	0	180	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 180 hours of on-site training to get hands-on experience of working in the industry.				
CSCI843	SOFTWARE PROJECT A	3	0	3
This course provides guidelines 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.				
CSCI844	ETHICAL HACKING	2	2	3
This course is designed to provide concepts and practices of cybersecurity with expert coverage of essential topics required for entry-level cybersecurity certifications. It covers the four distinct challenges: securing the infrastructure, securing devices, securing local networks, and securing the perimeter and the concepts and practices to overcome these challenges. 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. It will explore the various means that an intruder has available to gain access to computer resources. We will investigate weaknesses by discussing the theoretical background				



behind, and whenever possible, performing the attack. We will then discuss methods to prevent/reduce vulnerability.				
CSCI851	BIGDATA ANALYTICS	2	2	3
This course provides fundamental concepts related to big data and analytics. This course will explore the theory and applications of big data and demonstrate the process from data to decisions. Students will learn big data in various formats, data processing platforms and data analytics tools to transform, visualize, model, and communicate the insights hidden in the data, providing end users with timely knowledge to support decision making. The course will explain the challenges organizations are facing with managing big data.				
CSCI852	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	2	2	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 topic includes building blocks and components of artificial intelligence, learning about concepts like algorithms, machine learning, and neural networks. The laboratory focuses on training the students with building models using various artificial intelligence algorithms.				
CSCI853	SOFTWARE PROJECT B	3	0	3
This course provides an opportunity for 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.				
CSCI854	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 High Performance computing, Crypto currency, Block Chain. It exposes the current trends in Emerging technologies like High performance computing elaborate on how crypto currency and Block chain works and discuss on new trends in Web data Mining.				
CSCI855	TECHNOPRENEURSHIP	3	0	3
This course discusses the rapidly evolving world of creative new ventures 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 the information age, developing a 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.				
CSCI880A	AR VR TECH	2	2	3
In this course, students will learn & practice about the revolutionary medium of XR. Learn to create immersive experiences that inform, educate, entertain, and change the way we think about industries including Aerospace, Defense, Energy, Healthcare, Manufacturing and more. Students will be introduced to the core fundamentals of XR development engine & software and practical implementations of 3D graphics, OpenGL ES, AR, VR & MR which will prepare them to design and develop immersive XR apps & Solutions. After an introduction to the fundamentals, intermediate concepts will be learned by working through an XR project.				



CSCI880B	SOFTWARE ANALYSIS AND TESTING TOOLS	2	2	3
<p>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 cover 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.</p>				
CSCI880C	EMBEDDED SYSTEM	2	2	3
<p>This course will cover the basics of embedded system organization, systems on programmable-chip technologies and real-time systems. It provides the advanced 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.</p>				
CSCI882A	INTERNET OF THINGS	2	2	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>				
CSCI882B	WIRELESS AND MOBILE NETWORKS	2	2	3
<p>This course examines the characteristics of mobile and wireless networks and the impact of these characteristics 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.</p>				
CSCI882C	E-COMMERCE INFRASTRUCTURE AND APPLICATION	3	0	3
<p>This course discusses 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>				



College: College of Computer Studies

BSIT PROGRAMME SPECIFICATION AY2022-2023

1. Teaching Institution	University of Technology Bahrain
2. University Department	College of Computer Studies
3. Programme Title	Bachelor of Science in Information Technology (BSIT)
4. Title of Final Award	Bachelor of Science in Information Technology
5. Mode of Attendance	Full-time/ Part-time, actual classroom learning-interactive
6. National Qualification Framework Level and Credit	Level 8 540 Credits units
7. Accreditation	None
8. Other external influences	<p>Local External Influences/References Ministry of Education (MOE), Higher Education Council (HEC), Education and Training Quality Authority in the Kingdom of Bahrain (BQA)</p> <p>International External Influences/References Accreditation Board for Engineering and Technology (ABET), Association for Computing Machinery (ACM) in Computing, Quality Assurance Accreditation (QAA) in Computing</p>
9. Date of production/revision of this specification	September, 2022

10. Aims of the Programme

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.

The Programme goals are:

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.
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.
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 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

- Constructive Method: Students are required to attend the sessions regularly. Students learn by doing, writing, and solving problems. 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.
- Inquiry based Method: 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 Method: 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 Computing problems, discuss the algorithm of the problems, and present the solution in class.
- Experiential learning Method: Engaging students to hands on experience which attempts to apply theories and knowledge learned in the classroom to real-world situations. During laboratory hours, students will be given experiments to work on 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. This may include team challenges, simulations, company visits/fieldworks and other extracurricular activities.

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.



20. Programme Structure

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY (BSIT) CURRICULUM PLAN EFFECTIVE AY2022-2023

REMEDIAL CLASSES

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
MATH500	Remedial Mathematics	3	0	0	
ENGL500	English Foundation Course	12	0	0	

FIRST YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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	
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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	
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				19	

SECOND YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				17	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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
TOTAL				18	

THIRD YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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	
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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	
TOTAL				18	



THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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	
TOTAL				18	

FOURTH YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	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	
TOTAL				18	
GRAND TOTAL				180	

ELECTIVE COURSES

ELECTIVE 1 - SOFTWARE EXPERTISE

Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
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 Hrs	Lab Hrs	Units	Pre-Requisites
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 CYBERSECURITY SPECIALIZATION					
Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSIT736 – CS	Introduction to Digital Forensics	3	0	3	CSIT721
CSIT814 – CS	Network Security	2	2	3	CSIT736CS
CSIT815 – CS	Security Methods and Practices	3	0	3	
CSIT816 – CS	Ethical Hacking	2	2	3	
CSIT824 – CS	Wireless Networks	2	2	3	CSIT816CS
CSIT825 – CS	System and Security Administration	2	2	3	
CSIT826 – CS	Intrusion Detection and Prevention Systems	2	2	3	
CSIT834 – CS	Cloud Computing	3	0	3	CSIT826CS
CSIT835 – CS	Applied Cyber Security	3	0	3	
CSIT844 – CS	Advanced Cryptographic Algorithms	2	2	3	CSIT835CS



CSIT845 – CS	TCP/IP and Routing	2	2	3	
CSIT846 – CS	Mobile Internet Technology	2	2	3	

DATA ANALYTICS AND ARTIFICIAL INTELLIGENCE SPECIALIZATION					
Course Code	Course Title	Lec Hrs	Lab Hrs	Units	Pre-Requisites
CSIT736 – DA	Database Management Systems 2	2	2	3	CSIT721
CSIT814 – DA	Data Integration	2	2	3	CSIT736DA
CSIT815 – DA	Database Administration	2	2	3	
CSIT816 – DA	Data Mining and Analysis in Information Technology	2	2	3	
CSIT824 – DA	Web mining and Information Retrieval	2	2	3	CSIT816DA
CSIT825 – DA	Big Data Analytics in Business Intelligence	2	2	3	
CSIT826 – DA	Big Data Architecture and Design	2	2	3	
CSIT834 – DA	Cloud Based Data Distribution and Virtualization	3	0	3	CSIT826DA
CSIT835 – DA	Principles of Data Science and Visualization	2	2	3	CSIT835DA
CSIT844 – DA	Computational Thinking with Python	2	2	3	
CSIT845 – DA	Data Interpretation and Statistical Analysis in Information Technology	3	0	3	
CSIT846 – DA	Database Driven Web Applications	2	2	3	

APPLICATIONS DEVELOPMENT SPECIALIZATION					
Course Code	Course Title	Lec Hrs	Lab Hrs	Units	CSIT721
CSIT736 – AD	Database Management Systems 2	2	2	3	CSIT721
CSIT814 – AD	Python Programming	2	2	3	CSIT736AD
CSIT815 – AD	Database Administration	2	2	3	
CSIT816 – AD	Agile Project Management	3	0	3	
CSIT824 – AD	C# Programming and Application Development	2	2	3	CSIT816AD
CSIT825 – AD	Mobile Application Development	2	2	3	
CSIT826 – AD	Computer Graphics and Applications	2	2	3	
CSIT834 – AD	Cloud Computing	3	0	3	CSIT826AD
CSIT835 – AD	Server-Side Programming	2	2	3	CSIT835AD
CSIT844 – AD	Software Quality Assurance	3	0	3	
CSIT845 – AD	.Net Technologies	2	2	3	
CSIT846 – AD	Software Testing Tools	2	2	3	



13. Awards and Credits	
Degree/ Certificate Awarded	Bachelor's Degree in Information Technology
Total Units for Degree	180 ACS (540 NQF Credits)
Total Trimesters Completed	10
14. Personal Development Planning	
<ol style="list-style-type: none"> 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. 	
15. Admission Criteria	
Refer to pages 19-24 in this document.	
It can be viewed online through https://www.utb.edu.bh/wp-content/uploads/2023/10/BSIT-Programme-Specification-Effective-AY-2022-2023.pdf .	
16. Key Resources of information about the programme	
Included in the University Course Catalogue, uploaded to the UTB website	

17. BSIT CURRICULUM SKILLS MAPPING									
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)						
	ECON600	Introduction to Economics	(C)	√			√	√	
	HUMR600	Human Rights	(C)				√		
	CSIT611	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)		√	√		√	√
	CSIT623	Digital Design	(C)		√			√	
Year 1 3rd Tri	ENGL631	Speech and Oral Communication	(C)			√			
	MATH631	Differential Calculus with Analytic Geometry	(C)	√					
	CSIT631	Computer Programming2	(C)	√	√			√	√
	CSIT632	Web Content Management	(C)		√	√	√	√	√



17. BSIT CURRICULUM SKILLS MAPPING									
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Program Learning Outcomes					
				1	2	3	4	5	6
	CSIT633	Introduction to Green Computing	(C)	√	√	√	√	√	
	CSIT634	Computer Organization and Architecture	(C)	√	√	√		√	
Year 2 1st Tri	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)			√	√	√	
	CSIT715	Introduction to Management Information System	(C)	√	√	√	√		
Year 2 2nd Tri	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)	√	√			√	√
	CSIT725	Technopreneurship	(C)	√		√	√	√	
Year 2 3rd Tri	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)						
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)						



17. BSIT CURRICULUM SKILLS MAPPING									
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Program Learning Outcomes					
				1	2	3	4	5	6
	CSIT846	Specialization Elective 12	(E)						
COMPULSORY ELECTIVES									
	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)	√				√	√
SPECIALIZATION ELECTIVES									
	CSIT736 – CS	Introduction to Digital Forensics	(E)	√	√			√	√
	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)	√	√	√		√	√



17. BSIT CURRICULUM SKILLS MAPPING									
Year/ Level	Course Code	Course Title	Core (C) or Option (O)	Program Learning Outcomes					
				1	2	3	4	5	6
	CSIT826 – AD	Computer Graphics and Applications	(E)	√	√			√	√
	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)	√		√	√		√



BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY (BSIT)
CURRICULUM PLAN EFFECTIVE AY2022-2023

COURSES DESCRIPTION

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
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.				
MATH611	COLLEGE ALGEBRA	3	0	3
This course is designed to familiarize learners with the 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.				
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.				
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 roles 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.				
ECON600	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.				
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 such 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.				
CSIT611	INTRODUCTION TO COMPUTERS AND IT	2	2	3
This course covers a detailed knowledge and understanding of computer hardware and software. It includes the discussion of number systems, networking and the internet and the interdisciplinary science of computing. It also provides a discussion of programme development structures, algorithm and flowchart development. The laboratory delivers practices in Microsoft 365 Apps, configuring web browsers security, configuring E-mail security, configuring OS security.				
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.				
EUTH401	EUTHENICS 2	1	0	0
This course is designed to provide 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.				
MATH622	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 propositions, predicates, proofs, sets, relations, functions, graphs and trees. It simplifies and evaluates basic logic statements including compound statements, implications, inverses, converses, and contrapositives using truth table and the properties of logic.				
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 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.				
CSIT621	COMPUTER PROGRAMMING 1	2	2	3
This course covers detailed knowledge of problem solving and algorithm development, with emphasis 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, control flow and arrays. The laboratory focuses on the implementation of the programming theories and concepts in Java programming language.

CSIT422	MULTIMEDIA DEVELOPMENT	2	2	3
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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, and underlying techniques of incorporating multiple media, compression and sharing. Students will learn to apply the art of visual communication using 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.

CSIT623	DIGITAL DESIGN	2	2	3
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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.

ENGL631	SPEECH AND ORAL COMMUNICATION	2	2	3
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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 emphasis on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.

MATH631	DIFFERENTIAL CALCULUS WITH ANALYTIC GEOMETRY	5	0	5
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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).

CSIT631	COMPUTER PROGRAMMING 2	2	2	3
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This course covers object-oriented techniques using modern fourth generation language. Topics include inheritance, method overloading, overriding, polymorphism, packages, exception handling, multithreading, file operations and Event driven programming using swing components. The laboratory focuses on the implementation of programming theories and concepts in Java programming language.

CSIT632	WEB CONTENT MANAGEMENT	1	2	2
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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.



CSIT633	INTRODUCTION TO GREEN COMPUTING	3	0	3
<p>This course empowers students to reduce 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.</p>				
CSIT634	COMPUTER ORGANIZATION AND ARCHITECTURE	2	2	3
<p>This course provides critical knowledge and understanding of computer organization and architecture, functions, components and their interconnections. It also describes 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.</p>				
MATH621	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>				
CSIT5711	WEB DESIGN TECHNIQUES AND TOOLS	2	2	3
<p>This course focuses on dynamic database-driven Web site development. It covers more advanced tools and techniques for designing web sites using current web design and development tools. It also includes client and-server-side scripting, maintaining persistent information on the Web, user-interface design concepts, client-side and server-side technologies, Web Site Management with Content Management Systems (CMS) and Web databases. The laboratory focuses on implementing a Web Application using tools such as PHP, MySQL, PostgreSQL, Apache and AJAX.</p>				
CSIT712	DATA STRUCTURES	2	2	3
<p>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 hash tables. 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 structures like trees and graphs using array and linked list.</p>				
CSIT713	DATA COMMUNICATIONS AND NETWORKING 1	2	2	3
<p>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.</p>				



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.				
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 systems 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.				
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 through 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.				
CSIT721	DATABASE MANAGEMENT SYSTEMS 1	2	2	3
This course provides advanced core theories and practical skills in 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 advanced concepts and techniques in database development as well as providing 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.				
CSIT722	OPERATING SYSTEMS	2	2	3
This course provides advanced and detailed information about the components and functionalities of an operating system. 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 the laboratory, the various operating system commands are illustrated using Windows and Linux Operating Systems. scheduling, memory management and page replacement algorithms are implemented using Java.				
CSIT723	DATABASE MANAGEMENT SYSTEMS 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.				
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.				
CSIT725	TECHNOPRENEURSHIP	3	0	3
This course discusses creative new ventures 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 the information age, developing a 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.				
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 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.				
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.				
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.				
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.				
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 advanced encryption/decryption algorithm. It also discusses 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.				
CSIT736 AD	DATABASE MANAGEMENT SYSTEMS 2	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.				
CSIT736 CS	INTRODUCTION TO DIGITAL FORENSICS	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.				
CSIT736 DA	DATABASE MANAGEMENT SYSTEMS 2	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.				
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 processes, 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.				
CSIT812	HUMAN COMPUTER INTERACTIONS	3	0	3
This course discusses advanced theories and techniques in Human-Computer Interaction (HCI) systems with a 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.				
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).				
CSIT814 AD	PYTHON PROGRAMMING	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.				
CSIT814 DA	DATA INTEGRATION	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.				
CSIT814 CS	NETWORK SECURITY	2	2	3
This course covers 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 in order to attain a secure working environment. In the laboratory part, Cisco networking simulation tools are used to simulate, configure and apply Cisco compatible authentication protocols on the simulated networks.				
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.				
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.				
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.				
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.				
CSIT816 – DA	DATA MINING AND ANALYSIS IN INFORMATION TECHNOLOGY	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.				
CSIT816 – CS	ETHICAL HACKING	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, performing the attack. We will then discuss methods to prevent/reduce vulnerability.				
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.				
CSIT822	EMBEDDED SYSTEM	3	0	3
This course will cover the basics of embedded system organization, systems on programmable-chip technologies and real-time systems. It provides the advanced 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.				
CSIT823	MOBILE PROGRAMMING	2	2	3
This course provides a systematic explanation of advanced concepts in mobile programming and provides in-depth coverage of mobile systems and its application development. It includes the mobile user interface, application development standards and 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.				
CSIT824 – AD	C# PROGRAMMING AND APPLICATION DEVELOPMENT	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.				
CSIT824 – DA	WEB MINING AND INFORMATION RETRIEVAL	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 the Web and e-commerce data, and their use in Web analytics, user profiling and personalization.				
CSIT824 – CS	WIRELESS NETWORKS	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.				
CSIT825 – AD	MOBILE APPLICATION DEVELOPMENT	2	2	3
The course focuses on developing mobile applications. It introduces the advanced 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.				
CSIT825 – DA	BIG DATA ANALYTICS IN BUSINESS INTELLIGENCE	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.				



CSIT825 – CS	SYSTEM AND SECURITY ADMINISTRATION	2	2	3
<p>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.</p>				
CSIT826 – AD	COMPUTER GRAPHICS AND APPLICATIONS	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 focuses 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 animation.</p>				
CSIT826 – DA	BIG DATA ARCHITECTURE AND DESIGN	2	2	3
<p>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.</p>				
CSIT826 – CS	INTRUSION DETECTION AND PREVENTION SYSTEMS	2	2	3
<p>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.</p>				
CSIT832	PRACTICUM IN IT	0	12	6
<p>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 of on-site training to get hands-on experience of working in the industry.</p>				
CSIT833	SOFTWARE PROJECT A	3	0	3
<p>This course provides guidelines 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.</p>				
CSIT834 – A	PARALLEL AND DISTRIBUTED COMPUTING	2	2	3
<p>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 architecture, grid computing, and peer-to-peer computing. The Laboratory exercises will be used to demonstrate various aspects of</p>				



parallel and distributed computing in NetBeans with various simulation tools like Vmware, Hadoop, CloudSIM and IBM's Bluemix.				
CSIT834 – B	ENTERPRISE RESOURCE PLANNING	2	2	3
This course serves as an introduction to Enterprise Resource Planning and 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.				
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.				
CSIT835 – AD	CLOUD COMPUTING	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 describing concepts and technologies.				
CSIT835 – DA	CLOUD -BASED DATA DISTRIBUTION AND VIRTUALIZATION	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 describing concepts and technologies.				
CSIT835 – CS	CLOUD COMPUTING	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 describing concepts and technologies.				
CSIT836 – AD	SERVER-SIDE PROGRAMMING	2	2	3
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.				
CSIT836 – DA	PRINCIPLES OF DATA SCIENCE AND VISUALIZATION	2	2	3
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.				
CSIT836 – CS	APPLIED CYBER SECURITY	3	0	3
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.				
CSIT841	INTERNET OF THINGS	3	0	3
This course discusses the current and leading IoT technologies for building IoT solutions for Smart Homes, Smart Campus etc., using IoT sensors, 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.				
CSIT842	RESEARCH PROJECT B	0	6	3
This course provides an opportunity for 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.				
CSIT843 – A	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	2	2	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 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.				
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.				
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.				



CSIT844 – AD	SOFTWARE QUALITY ASSURANCE	3	0	3
<p>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.</p>				
CSIT844 – DA	COMPUTATIONAL THINKING WITH PYTHON	2	2	3
<p>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.</p>				
CSIT844 – CS	ADVANCED CRYPTOGRAPHIC ALGORITHMS	2	2	3
<p>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.</p>				
CSIT845 – AD	.NET TECHNOLOGIES	2	2	3
<p>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 in Visual Studio. The students will gain skills in Visual programming and ASP.NET using the Integrated Development Environment (IDE) Visual Studio.</p>				
CSIT845 – DA	DATA INTERPRETATION AND STATISTICAL ANALYSIS IN INFORMATION TECHNOLOGY	3	0	3
<p>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.</p>				
CSIT845 – CS	TCP/IP AND ROUTING	2	2	3
<p>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 datalink, 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</p>				



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.

CSIT846 – AD	SOFTWARE TESTING TOOLS	2	2	3
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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.

CSIT846 – DA	DATABASE-DRIVEN WEB APPLICATIONS	2	2	3
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This course focuses on 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.

CSIT846 – CS	MOBILE INTERNET TECHNOLOGY	2	2	3
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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.



College: College of Engineering

BSIE PROGRAMME SPECIFICATION AY2022-2023

1. Teaching Institution	University of Technology Bahrain
2. University Department	College of Engineering
3. Programme Title	Bachelor of Science in Informatics Engineering (BSIE)
4. Title of Final Award	Bachelor of Science in Informatics Engineering (BSIE)
5. Mode of Attendance	Full time
6. National Qualification Framework Level and Credit	NQF Level 8 612 NQF Credits (204 ACS Credits)
7. Accreditation	ABET
8. Other external influences	<p>Local External Influences/References Ministry of Education (MOE), Higher Education Council (HEC) National Authority of Qualifications and Quality Assurance for Education and Training (NAQQAET)</p> <p>International External Influences/References Accreditation Board for Engineering and Technology (ABET)</p>
9. Date of production/revision of this specification	September 2023

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 computers, control systems and software engineering technologies.

Programme Educational Objectives:

The objectives of BSIE programme are to produce graduates who will be able to:

1. pursue careers in Informatics 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; and
3. demonstrate professional success through strengthened networks and/or positions of increasing social responsibility.

11. Learning Outcomes, Teaching, Learning and Assessment Methods

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

1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics;
2. apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors;

3. communicate effectively with a range of audiences;
4. recognise 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. function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives;
6. develop and conduct appropriate experimentation, analyse and interpret data, and use engineering judgment to draw conclusions; and
7. acquire and apply new knowledge as needed, using appropriate learning strategies.

Teaching and Learning Methods

1. **Constructive Method:** Students are required to 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. Teachers implement differentiated learning, authentic assessment practices and incorporate technologies to improve individual learning experiences. It includes simulations, in-course projects, digital content, group discussions and reflections. This method strives to improve achievement by consciously developing students' 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.** Students 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, students 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.
3. **Collaborative Method.** Students 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.** By engaging students to hands on experience which attempts to apply theories and knowledge learned in the classroom to real-world situations. This includes team challenges, simulations, internships, capstone projects, and other extracurricular activities.

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 AY2022-2023

REMEDIAL CLASSES

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
ENGL500	English Foundation Course	12	0	0	
MATH500	Remedial Mathematics	3	0	0	

FIRST YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
ARAB600	Arabic Language	3	0	3	
CHEM611	General Chemistry	2	2	3	
IENF611	Introduction to Computing	2	2	3	
ENGL611	English Communication Skills 1	3	0	3	
EUTH500	Euthenics	1	0	0	
MATH631	Calculus 1	5	0	5	
TOTAL				17	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
IENF621	Computer Programming	2	2	3	IENF611
ENGL621	English Communication Skills 2	3	0	3	ENGL611
HIST600	History of Bahrain and GCC Region	3	0	3	
MATH711	Calculus 2	5	0	5	MATH631
HUMR600	Human Rights	3	0	3	
TOTAL				17	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
IENF631	Advanced Programming	2	2	3	IENF621
ENGL631	Speech and Oral Communication	2	2	3	ENGL621
SCIE631	Biology	2	2	3	
MATH621	Probability and Statistics	3	0	3	MATH631
PHYS631	University Physics 1	2	2	3	MATH631
ENVS711	Environmental Science	3	0	3	
TOTAL				18	

SECOND YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
IENF711	Data Structures and Algorithm	2	2	3	IENF631
ENGL711	Technical Writing	3	0	3	ENGL621
ENGG711	Engineering Drawing	2	2	3	ENGG711
MATH722	Advanced Mathematics	3	0	3	MATH711
MATH622	Discrete Mathematics	3	0	3	MATH631



PHYS711	University Physics 2	2	2	3	PHYS631, MATH711
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
ENGG721	Electric Circuit Theory 1	2	2	3	PHYS711
IENF721	Principles of Communications	2	2	3	PHYS631
IENF722	Database Systems	2	2	3	IENF711
IENF723	Introduction to Data Science	2	2	3	IENF711
MATH731	Multivariate Calculus	2	2	3	MATH711
PHYS722	University Physics 3	2	2	3	PHYS711
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
ENGG734	Signals and Systems	2	2	3	ENGG721
ENGG733	Engineering Economy	3	0	3	MATH621
ENGG731	Electronics 1	2	2	3	ENGG721
ENGG732	Electric Circuit Theory 2	2	2	3	ENGG721
MATH732	Numerical Methods and Analysis	2	2	3	MATH722
MATH733	Linear Algebra	2	2	3	MATH731
TOTAL				18	

THIRD YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
ENGG813	Digital Logic Design	2	2	3	ENGG731
IENF811	Computer Networks 1	2	2	3	IENF721
ENGG812	Electronics 2	2	2	3	ENGG731
IENF812	Artificial Intelligence	2	2	3	IENF723
ENGG811	Electromagnetics	3	0	3	ENGG732
MATH821	Optimization Methods	3	0	3	MATH732
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
IENF821	Computer Networks 2	2	2	3	IENF811
IENF822	Advanced Digital Logic Design	2	2	3	ENGG813
IENF823	Computer Organization and Architecture	2	2	3	ENGG813
IENF824	Power Electronics	2	2	3	ENGG812
ENGG821	Control Systems	2	2	3	ENGG734
ENGG831	Engineering and Project Management	3	0	3	ENGG733
TOTAL				18	



THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
IENF831	Computer Networks 3	2	2	3	IENF821
IENF832	Operating System	2	2	3	IENF722
IENF833	Machine Vision	2	2	3	IENF812
IENF834	Systems Analysis and Design	2	2	3	IENF722
IENF835	Cloud Computing	2	2	3	IENF821
ENGG842	Safety Engineering	2	0	2	IENF824
TOTAL				17	

FOURTH YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
IENF841	Digital Systems Design using HDL	2	2	3	IENF822
IENF842	Wireless Communication Systems	2	2	3	IENF821
ENGG841	Technopreneurship	3	0	3	ENGG831
IENF843	Enterprise Networking	2	2	3	IENF821
IENF844	Microcontroller and Embedded Systems	2	2	3	IENF823
ENGG851	Professional Ethics and Engineering Laws	3	0	3	ENGG831
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
IENF851	Software Engineering	2	2	3	IENF832
IENF852	Major Elective 1	2	2	3	IENF821
IENF853	Major Elective 2	2	2	3	IENF832
IENF854	Major Elective 3	2	2	3	ENGG821
IENF855	Informatics Engineering Design Project A	0	6	3	IENF844
IENF856	Robot Kinematics, Dynamics and Control	2	2	3	ENGG821
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
IENF861	Industrial Attachment	0	6	6	IENF844
IENF862	Informatics Engineering Design Project B	0	6	3	IENF855
TOTAL				9	
Grand Total				204	

ELECTIVE COURSES

MAJOR ELECTIVE 1

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
IENF852A	Cryptographic Systems	2	2	3	IENF821
IENF852B	Network Security	2	2	3	IENF821



IENF852C	Ethical Hacking	2	2	3	IENF821
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MAJOR ELECTIVE 2

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
IENF853A	Microprocessor Systems	2	2	3	IENF832
IENF853B	Data Mining	2	2	3	IENF832
IENF853C	Parallel and Distributed Computing	2	2	3	IENF832

MAJOR ELECTIVE 3

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
IENF854A	Special Topics in Computer Engineering	2	2	3	ENGG821
IENF854B	Digital Control Systems	2	2	3	ENGG821
IENF854C	Industrial Control Systems Design	2	2	3	ENGG821
MECH662D	Power Plant	2	2	3	ENGG532

13. Awards and Credits

Degree/ Certificate Awarded	Bachelor's Degree
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Total Units for Degree	204
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Total Trimesters Completed	12
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14. Personal Development Planning

1. Conduct in-house trainings and seminars related to electronics, software engineering, information systems, AutoCAD, programmable logic controllers, CAD/CAM technology, microprocessor systems, automation systems and robotics technology.
2. Send faculty members in local and international conferences, seminars and trainings related to their fields of specialization.
3. Support faculty members in their conduct of research projects aligned to the College's research thrusts and priorities.
4. Establish partnerships and linkages where research collaborations can be made.
5. Encourage publication of research outputs and dissemination of results through participation in international research conferences and fora.

15. Admission Criteria

Refer to pages 19-24 in this document.

It can be viewed online through <https://www.utb.edu.bh/wp-content/uploads/2024/02/BSIE-Programme-Specification-Effective-AY2022-2023.pdf>.

16. CGPA Requirement for Graduation

2.0 out of 4.0

17. Key Resources of information about the programme

Included in the University Catalogue, uploaded to the UTB website



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	ARAB600	Arabic Language	(C)				✓			
	CHEM611	General Chemistry	(C)	✓				✓	✓	✓
	IENF611	Introduction to Computing	(C)	✓	✓			✓	✓	✓
	ENGL611	English Communication Skills 1	(C)			✓				
	EUTH500	Euthenics	(C)							
	MATH631	Calculus 1	(C)	✓						
Year 1 2nd Tri	IENF621	Computer Programming	(C)	✓	✓		✓	✓	✓	
	ENGL621	English Communication Skills 2	(C)			✓				
	HIST600	History of Bahrain and GCC Region	(C)				✓			
	MATH711	Calculus 2	(C)	✓						
	HUMR600	Human Rights	(C)				✓			
Year 1 3rd Tri	IENF631	Advanced Programming	(C)	✓	✓		✓	✓	✓	
	ENGL631	Speech and Oral Communication	(C)			✓				
	SCIE631	Biology	(C)	✓				✓	✓	
	MATH621	Probability and Statistics	(C)	✓						
	PHYS631	University Physics 1	(C)	✓				✓	✓	
	ENVS711	Environmental Science	(C)				✓			✓
Year 2 1st Tri	MATH722	Advanced Mathematics	(C)	✓					✓	✓
	ENGL711	Technical Writing	(C)			✓				
	ENGG711	Engineering Drawing	(C)	✓						
	MATH622	Discrete Mathematics	(C)	✓					✓	✓
	IENF711	Data Structures & Algorithm	(C)	✓	✓		✓	✓	✓	
	PHYS711	University Physics 2	(C)	✓				✓	✓	✓
Year 2 2nd Tri	IENF721	Principles of Communications	(C)	✓	✓			✓	✓	
	ENGG721	Electric Circuit Theory 1	(C)	✓	✓	✓		✓	✓	
	MATH731	Multivariate Calculus	(C)	✓					✓	✓
	IENF723	Introduction to Data Science	(C)	✓	✓			✓	✓	✓
	IENF722	Database Systems	(C)	✓	✓			✓	✓	✓
	PHYS722	University Physics 3	(C)	✓				✓	✓	✓
Year 2 3rd Tri	ENGG731	Electronics 1	(C)	✓	✓	✓		✓	✓	
	ENGG734	Signals and Systems	(C)					✓	✓	
	ENGG732	Electric Circuit Theory 2	(C)	✓	✓	✓		✓	✓	✓
	ENGG733	Engineering Economy	(C)	✓			✓			
	MATH733	Linear Algebra	(C)	✓				✓	✓	✓
	MATH732	Numerical Methods and Analysis	(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
Year 3 1st Tri	ENGG813	Digital Logic Design	(C)	✓	✓	✓		✓	✓	✓
	IENF811	Computer Networks 1	(C)	✓	✓	✓	✓	✓		
	ENGG812	Electronics 2	(C)	✓	✓	✓		✓	✓	✓
	IENF812	Artificial Intelligence	(C)	✓	✓			✓	✓	✓
	ENGG811	Electromagnetics	(C)	✓						✓
	MATH821	Optimization Methods		✓						
Year 3 2nd Tri	IENF821	Computer Networks 2	(C)	✓	✓			✓	✓	✓
	IENF822	Advanced Digital Logic Design	(C)	✓	✓			✓	✓	✓
	ENGG831	Engineering Project Management	(C)	✓			✓	✓		
	ENGG821	Control Systems	(C)	✓	✓				✓	✓
	IENF823	Computer Organization and Architecture	(C)	✓	✓	✓	✓	✓	✓	✓
	IENF824	Power Electronics	(C)	✓	✓	✓		✓	✓	✓
Year 3 3rd Tri	IENF831	Computer Networks 3	(C)	✓	✓			✓	✓	✓
	ENGG842	Safety Engineering	(C)				✓			
	IENF832	Operating Systems	(C)	✓	✓			✓	✓	✓
	IENF833	Machine Vision	(C)	✓	✓	✓		✓	✓	✓
	IENF834	Systems Analysis and Design	(C)	✓	✓			✓	✓	✓
	IENF835	Cloud Computing	(C)	✓	✓			✓	✓	✓
Year 4 1st Tri	IENF841	Digital Systems Design using HDL	(C)	✓	✓	✓			✓	✓
	IENF842	Wireless Communication Systems	(C)	✓	✓	✓		✓	✓	✓
	ENGG841	Technopreneurship	(C)			✓	✓	✓	✓	
	IENF843	Enterprise Networking	(C)	✓	✓		✓	✓	✓	✓
	IENF844	Microcontroller and Embedded Systems	(C)	✓	✓	✓		✓	✓	✓
	ENGG851	Professional Ethics and Engineering Laws	(C)				✓			
Year 4 2nd Tri	IENF856	Robot Kinematics, Dynamics and Control	(C)	✓	✓	✓		✓	✓	✓
	IENF852	Major Elective 1	(O)	✓	✓			✓	✓	✓
	IENF853	Major Elective 2	(O)	✓	✓			✓	✓	✓
	IENF854	Major Elective 3	(O)	✓	✓			✓	✓	✓
	IENF851	Software Engineering	(C)	✓	✓			✓	✓	✓
	IENF855	Informatics Engineering Design Project A	(C)	✓	✓	✓	✓	✓		✓
Year 4 3rd Tri	IENF861	Industrial Attachment	(C)	✓	✓	✓	✓	✓		✓
	IENF862	Informatics Engineering Design Project B	(C)	✓	✓	✓	✓	✓	✓	✓



BACHELOR OF SCIENCE IN INFORMATICS ENGINEERING (BSIE)
CURRICULUM PLAN EFFECTIVE AY2022-2023

COURSES DESCRIPTION

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH500	REMEDIAL MATHEMATICS	3	0	0
<p>This course is a foundation in mathematics focusing on the building of the knowledge and skills and understanding to solve problems in college algebra and trigonometry. It deals with the topics on equations and Inequalities; functions and graphs; polynomial and rational Functions; exponential and logarithmic functions; trigonometric functions; trigonometric identities and equations; application of trigonometry; systems of equations and inequalities; and matrices. It also includes the application of the mathematical thinking process.</p>				
ENGL500	ENGLISH FOUNDATION COURSE	9	0	0
<p>ENGL500 is a required foundation course for entering students whose English language skills need further improvement and enhancement to be able to cope with the university's academic courses. This course introduces the students to the English language where they get involved and engaged in the learning process. It utilizes an integrated approach in developing the students' English macro communication skills in speaking, listening, grammar, and vocabulary in one phase (pre-intermediate) which will serve as the benchmark for the next level first year English course. Furthermore, the course intensifies its intended learning objectives with the comprehensive utilization of audio-lingual presentations, includes information related to dictionary use, basic grammar rules, daily use vocabulary words through a variety of contexts, written responses, writing structures, settings of writing, and the process of forming written and spoken communications. Hence, the students are expected to gain more knowledge to communicate effectively in English.</p>				
CHEM611	GENERAL CHEMISTRY	2	2	3
<p>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.</p>				
IENF611	INTRODUCTION TO COMPUTING	2	2	3
<p>This course covers a detailed knowledge and understanding of computer hardware and software. It includes the discussion of number systems, networking and the internet and the interdisciplinary science of computing. It also provides a discussion of programme development structures, algorithm and flowchart development. The laboratory delivers practices in Microsoft 365 Apps, configuring web browsers security, configuring E-mail security, configuring OS security.</p>				
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>				



MATH631	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>				
EUTH500	EUTHENICS	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 roles 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.</p>				
ARAB600	ARABIC LANGUAGE	3	0	
<p>يركز مقرر ARAB600 على دراسة أساسيات اللغة العربية كقراءة وتحليل و نقد وبيان خصائص النصوص المطلوبة التي تتناول مختلف الأجناس الأدبية نثراً وشعراً. 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>				
HUMR600	HUMAN RIGHTS	3	0	3
<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>				
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>				



MATH631	CALCULUS 1	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>				
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>				
HIST600	HISTORY OF BAHRAIN AND GCC REGION	3	0	3
<p>يتناول مقرر HIST600 دراسة تاريخ مملكة البحرين ومنطقة الخليج العربي ويُظهر تعداداً للأحداث 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 الإسلامي، والاحتلال البرتغالي، وصراع القوى في القرن السابع عشر، وصعود قبيلة العتوب، والبحرين تحت الحماية البريطانية و إبرام المعاهدات مع بريطانيا، وانسحاب القوات البريطانية من البحرين والخليج ، ويتناول وصف الاماكن والشخصيات والتطورات التاريخية والانجازات في البحرين في عهد حكام البحرين، والبعث العربي والإسلامي 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-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>				
MATH711	CALCULUS 2	5	0	5
<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>				
PHYS631	UNIVERSITY PHYSICS 1	2	2	3
<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>				



IENF621	COMPUTER PROGRAMMING	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, control flow and arrays. The laboratory focuses on the implementation of the programming theories and concepts in Java programming language.</p>				
ENGL711	TECHNICAL WRITING	3	0	3
<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>				
ENVS711	ENVIRONMENTAL SCIENCE	3	0	3
<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 alternative energy sources, present day agricultural practices, biodiversity and threats by human activity, and conservation issues.</p>				
MATH622	DISCRETE MATHEMATICS	3	0	3
<p>This course introduces fundamental concepts and techniques in set theory in preparation for its many applications in Informatics Engineering. 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.</p>				
ENGG711	ENGINEERING DRAWING	2	2	3
<p>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.</p>				
PHYS711	UNIVERSITY PHYSICS 2	2	2	3
<p>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.</p>				
IENF711	DATA STRUCTURES & ALGORITHM	2	2	3
<p>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 hash tables. In addition, it covers various strategies for choosing appropriate structures</p>				



according to the system requirements. The laboratory portion covers the implementation of linear data structures such as stacks and queues and nonlinear data structures like trees and graphs using array and linked list.				
ENGG721	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.				
MATH722	ADVANCED MATHEMATICS	2	2	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.				
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).				
IENF631	ADVANCED PROGRAMMING	2	2	3
This course covers object-oriented techniques using modern fourth generation language. Topics include inheritance, method overloading, overriding, polymorphism, packages, exception handling, multithreading, file operations and Event driven programming using swing components. The laboratory focuses on the implementation of programming theories and concepts in Java programming language.				
PHYS722	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.				
ENGG731	ELECTRONICS 1	2	2	3
This course discusses 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.				
IENF721	PRINCIPLES OF COMMUNICATION	2	2	3
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, etc).				
ENGG732	ELECTRIC CIRCUIT THEORY 2	2	2	3
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.				
ENGG733	ENGINEERING ECONOMY	3	0	3
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.				
MATH731	MULTIVARIATE CALCULUS	2	2	3
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 a tool in solving problems in Multivariate Calculus.				
MATH732	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 a tool in solving problems in Numerical Analysis.				
IENF722	DATABASE SYSTEMS	2	2	3
This course provides advanced core theories and practical skills in 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 advanced concepts and techniques in database development as well as providing 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.				
IENF723	INTRODUCTION TO 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.				



ENGG813	DIGITAL LOGIC DESIGN	2	2	3
<p>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 projects, the students will creatively implement complex applications of digital logic circuits.</p>				
IENF811	COMPUTER NETWORKS 1	2	2	3
<p>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.</p>				
ENGG812	ELECTRONICS 2	2	2	3
<p>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.</p>				
ENGG734	SIGNALS AND SYSTEMS	2	2	3
<p>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.</p>				
ENGG811	ELECTROMAGNETICS	2	2	3
<p>This course covers core topics on electric and magnetic fields that emphasizes fundamental concepts and applications in electromagnetics. 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.</p>				
MATH733	LINEAR ALGEBRA	2	2	3
<p>This course uses 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 used as mathematical software and solutions to a variety of mathematical problems are determined.</p>				
IENF812	ARTIFICIAL INTELLIGENCE	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 topic includes building blocks and components of artificial intelligence, learning about concepts like</p>				



algorithms, machine learning, and neural networks. The laboratory focuses on training the students with building models using various artificial intelligence algorithms.				
IENF821	COMPUTER NETWORKS 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.				
IENF822	ADVANCED DIGITAL LOGIC DESIGN	2	2	3
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 .				
ENGG821	CONTROL SYSTEMS	2	2	3
The course deals with the study of the concepts of control systems. It covers also the discussion of 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.				
IENF823	COMPUTER ORGANIZATION AND ARCHITECTURE	2	2	3
This course covers computer arithmetic, computer functions, components and their interconnections. It also includes discussion on microprocessors 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.				
IENF824	POWER ELECTRONICS	2	2	3
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 phase with PWM techniques.				
IENF831	COMPUTER NETWORKS 3	2	2	3
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 models. 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.				



ENGG831	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>				
IENF832	OPERATING SYSTEMS	2	2	3
<p>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 the 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.</p>				
MATH821	OPTIMIZATION METHODS	3	0	3
<p>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.</p>				
IENF833	MACHINE VISION	2	2	3
<p>This course discusses core theories, principles and concepts of machine vision devices and techniques and 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 to understand the breadth and depth of the lecturing materials. The main topics 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>				
IENF834	SYSTEMS ANALYSIS AND DESIGN	2	2	3
<p>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 on using UML using various tools.</p>				
IENF835	CLOUD COMPUTING	3	3	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 describing concepts and technologies.</p>				



ENGG841	TECHNOPRENEURSHIP	3	0	3
<p>The course deals with the study of entrepreneurship in the 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.</p>				
IENF841	DIGITAL SYSTEMS DESIGN USING HDL	2	2	3
<p>This course covers topics in the advanced design and analysis of digital circuits with VHDL. The primary goal is to provide an 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.</p>				
IENF842	WIRELESS COMMUNICATION SYSTEMS	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>				
IENF843	ENTERPRISE NETWORKING	2	2	3
<p>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.</p>				
IENF844	MICROCONTROLLER AND EMBEDDED SYSTEMS	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 projects, the students will creatively implement complex applications of microcontroller-based systems.</p>				
ENGG842	SAFETY ENGINEERING	2	0	2
<p>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.</p>				
ENGG851	PROFESSIONAL ETHICS AND ENGINEERING LAWS	3	0	3
<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,</p>				



regulatory system, approaches to preventing and mitigating environmental problems, and the elements of an effective environmental management system.				
IENF851	SOFTWARE ENGINEERING	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 processes, 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.				
IENF855	INFORMATICS ENGINEERING DESIGN PROJECT A	0	6	3
This is the first of two courses in Informatics 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.				
IENF861	INDUSTRIAL ATTACHMENT	0	6	6
This course is a practicum course where the students are exposed to an 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 students submit a final report and a performance evaluation made by the on-site supervisor.				
IENF862	INFORMATICS ENGINEERING DESIGN PROJECT B	0	6	3
This course is a continuation of Informatics Engineering Design A 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 applications 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.				
IENF852A	CRYPTOGRAPHIC SYSTEMS	2	2	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 advanced encryption/decryption algorithm. It also discusses 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 suitable cryptographic algorithms for a given problem to resolve security issues.				



IENF852B	NETWORK SECURITY	2	2	3
<p>This course discusses the essentials and underlying 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 a secure working environment. In the laboratory part, Cisco networking simulation tools are used to simulate, configure and apply Cisco compatible authentication protocols on the simulated networks.</p>				
IENF852C	ETHICAL HACKING	2	2	3
<p>This course is designed to provide concepts and practices of cybersecurity with expert coverage of essential topics required for entry-level cybersecurity certifications. It covers the four distinct challenges: securing the infrastructure, securing devices, securing local networks, and securing the perimeter and the concepts and practices to overcome these challenges. 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. It will explore the various means that an intruder has available 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 vulnerability.</p>				
IENF853A	MICROPROCESSOR SYSTEMS	2	2	3
<p>This course demonstrates advanced knowledge and understanding of 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.</p>				
IENF853B	DATA MINING	2	2	3
<p>This course provides an in-depth study of the field of statistical analysis and data mining as it relates to real-world applications. The 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 and R data mining tools and using that perform preprocessing, classifications and clustering based on real word data sets.</p>				
IENF853C	PARALLEL AND DISTRIBUTED COMPUTING	2	2	3
<p>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 architecture, grid computing, and peer-to-peer computing. The Laboratory exercises will be used to demonstrate various aspects of parallel and distributed computing using MS MPI.</p>				
IENF854A	ROBOT KINEMATICS, DYNAMICS AND CONTROL	2	2	3
<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 students 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>				



IENF854B	DIGITAL CONTROL SYSTEMS	2	2	3
<p>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.</p>				
IENF854C	INDUSTRIAL CONTROL SYSTEMS DESIGN	2	2	3
<p>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.</p>				
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 of explanations based on evidence through inquiry-based laboratory activities to provide insight into scientific methods.</p>				



College: College of Engineering

BSME PROGRAMME SPECIFICATION AY2022-2023

1. Teaching Institution	University of Technology Bahrain (UTB)
2. University Department	College of Engineering
3. Programme Title	Bachelor of Science in Mechatronics Engineering (BSME)
4. Title of Final Award	Bachelor of Science in Mechatronics Engineering (BSME)
5. Mode of Attendance	Full time
6. National Qualification Framework Level and Credit	NQF Level 8 612 NQF Credits (204 ACS Credits)
7. Accreditation	ABET
8. Other external influences	<p>Local External Influences/References Ministry of Education (MOE), Higher Education Council (HEC) Education and Training Quality Authority (BQA)</p> <p>International External Influences/References Accreditation Board for Engineering and Technology (ABET)</p>
9. Date of production/revision of this specification	September 2023
10. Aims of the Programme	
<p>The Bachelor of Science in Mechatronics Engineering (BSME) 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>Programme Educational Objectives The objectives of BSME programme are to produce graduates who will be able to:</p> <ol style="list-style-type: none"> 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; and 3. demonstrate professional success through strengthened networks and/or positions of increasing social responsibility. 	
11. Learning Outcomes, Teaching, Learning and Assessment Methods	
<p>Upon successful completion of the programme, the student will be able to:</p> <ol style="list-style-type: none"> 1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics; 2. apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors; 3. communicate effectively with a range of audiences; 4. recognise 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. function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives;
6. develop and conduct appropriate experimentation, analyse and interpret data, and use engineering judgment to draw conclusions; and
7. acquire and apply new knowledge as needed, using appropriate learning strategies.

Teaching and Learning Methods

1. Active and Engaged Learning. Students are required to attend the sessions regularly. Students learn by doing, making, writing, designing, creating, and solving. Active participation of the students 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.
2. 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.
3. 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.
4. Collaborative learning. Students will be divided into groups with at least three (3) 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 engineering problems, discuss the algorithm of the problems, and present the solution in class.
5. 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.

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 AY2022-2023

REMEDIAL CLASSES

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit 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 Hrs	Lab Hrs	Credit Units	Pre-Requisites
ARAB400	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	
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit 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	3	0	3	
MATH406	Differential Calculus with Analytic Geometry	5	0	5	MATH401, MATH402
SOCI400	Sociology	3	0	3	
TOTAL				17	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit 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	
TOTAL				17	

SECOND YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
ENVS400	Environmental Science	3	0	3	SCIE400
ENGL502	Technical Writing	3	0	3	ENGL402



ENGG410	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
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit 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
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
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
TOTAL				18	

THIRD YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
CENG611	Data Communication & 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
TOTAL				19	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit 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
MECH631	Power Electronics	3	2	4	ENGG613
MECH633	Introduction to Fuzzy/Neural System	3	2	4	ENGG627, MATH503
TOTAL				19	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit 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
TOTAL				18	

FOURTH YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Pre-Requisites
ENGG639	Professional Ethics and Engineering Laws	3	0	3	ENGG501
MECH639	Microcontroller	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
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit 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
TOTAL				12	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	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
TOTAL				12	
Grand Total				204	



ELECTIVE COURSES

MAJOR ELECTIVE 1

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	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 Hrs	Lab Hrs	Credit Units	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
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Total Units for Degree	204
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Total Trimesters Completed	12
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14. Personal Development Planning

1. Conduct in-house trainings and seminars related to electronics, software engineering, information systems, AutoCAD, programmable logic controllers, CAD/CAM technology, microprocessor systems, automation systems and robotics technology.
2. Send faculty members in local and international conferences, seminars and trainings related to their fields of specialization.
3. Support faculty members in their conduct of research projects aligned to the College's research thrusts and priorities.
4. Establish partnerships and linkages where research collaborations can be made.
5. Encourage publication of research outputs and dissemination of results through participation in international research conferences and fora.

15. Admission Criteria

Refer to pages 19-24 in this document.

It can be viewed online through <https://www.utb.edu.bh/wp-content/uploads/2024/02/BSME-Programme-Specification-Effective-AY2022-2023.pdf>.

16. CGPA Requirement for Graduation

2.0 out of 4.0

17. Key Resources of information about the programme

Included in the University Catalogue, uploaded to the UTB website



18. BSME 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	ARAB400	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)	✓						
	MATH402	Plane and Spherical Trigonometry	(C)	✓						
Year 1 2nd Tri	CENG511	Computer Programming	(C)	✓					✓	
	ENGL402	English Communication Skills 2	(C)			✓				
	EUTH401	Euthenics 2	(C)							
	HIST400	History of Bahrain and GCC	(C)				✓			
	MATH406	Differential Calculus with Analytic Geometry	(C)	✓						
	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)			✓				
	ENGG410	Engineering Drawing	(C)	✓						
	ENGG520	Engineering Materials	(C)	✓			✓			
	MATH503	Discrete Mathematics	(C)	✓						
Year 2 2nd Tri	PHYS502	University Physics 2	(C)	✓				✓	✓	✓
	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	ENGG521	Engineering Mechanics	(C)	✓						
	ENGG522	Engineering Economy	(C)	✓			✓			
	ENGG534	Electronics 1	(C)	✓	✓	✓		✓	✓	



18. BSME 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
3rd Tri	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)	✓	✓				✓	✓
	MECH631	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 Control	(C)	✓	✓	✓		✓	✓	✓
Year 4 1st Tri	ENGG639	Professional Ethics, Laws and Contracts	(C)				✓			
	MECH639	Microcontroller		✓	✓	✓		✓	✓	✓
	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)	✓	✓	✓	✓	✓	✓	✓
	MECH645	Technopreneurship	(C)			✓	✓	✓	✓	✓



18. BSME 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 4 3rd Tri	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)	✓	✓	✓	✓		✓	✓



BACHELOR OF SCIENCE IN MECHATRONICS ENGINEERING (BSME)
CURRICULUM PLAN EFFECTIVE AY2022-2023

COURSES DESCRIPTION

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH300	REMEDIAL MATHEMATICS	3	0	0
This course is a foundation in mathematics focusing on the building of the knowledge and skills and understanding to solve problems. It deals with the topics on four general operations relating to whole numbers and money, fractions and decimals, location, time and temperature, percent linked with fraction and decimal, rates and ratios, statistics and probability, and introduction to algebra. It also includes the application of the mathematical thinking process.				
ENGL301	SPEAKING AND LISTENING	9	0	0
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.				
ENGL302	GRAMMAR AND VOCABULARY	9	0	0
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.				
ARAB400	ARABIC LANGUAGE	3	0	3
على دراسة أساسيات اللغة العربية كقراءة وتحليل و نقد و بيان خصائص النصوص المطلوبة التي تتناول مختلف ARAB400 يركز مقرر الأجناس الأدبية نثراً وشعراً. كما يركز هذا المقرر على دراسة وفهم وتطبيق القواعد النحوية والأساليب الصرفية الأساسية في اللغة العربية مع مراعاة مهارات الكتابة الإملائية الصحيحة.				
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 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.				



ENGL401	ENGLISH COMMUNICATIONS 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 and sentences. 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>				
EUTH400	EUTHENICS 1	1	0	0
<p>This course focuses on the discussion of the policies and procedures that are intended to guide each member of the 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.</p>				
MATH 401	COLLEGE ALGEBRA	3	0	3
<p>This course is designed to familiarize learners with the 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>				
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>				
CENG511	COMPUTER PROGRAMMING	2	2	3
<p>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 programming theories and concepts using Java.</p>				
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>				
EUTH401	EUTHENICS 2	1	0	0
<p>The course introduces the students to the guidelines on disciplinary actions as regards violations of the rules and regulations of the University. The students will be taught 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 the conduct of an educated individual.</p>				



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 HIST400 يتناول مقرر بدءاً من الحضارات القديمة و مروراً إلى العربي وأثارها على الوضع الراهن ، و يغطي الأهمية الاستراتيجية والمكانية للبحرين للبحرين العهد الاسلامي، والاحتلال البرتغالي، وصراع القوى في القرن السابع عشر، وصعود قبيلة العتوب، والبحرين تحت الحماية البريطانية و ابرام ، ويتناول وصف الاماكن والشخصيات والتطورات التاريخية المعاهدات مع بريطانيا، وانسحاب القوات البريطانية من البحرين والخليج 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>				
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>				
SOCI400	SOCIOLOGY	3	0	3
<p>This course is designed to expose students to a detailed approach to 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>				
CENG523	ADVANCED PROGRAMMING	2	2	3
<p>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.</p>				
ENGL403	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 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 emphasis on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.</p>				



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 their 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.				
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.				
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 of explanations based on evidence through inquiry-based laboratory activities to provide insight into scientific methods.				
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.				
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.				
ENGG410	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.				
ENGG520	ENGINEERING MATERIALS	3	0	3
This course deals with engineering materials and deals with the study of 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.				
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.				
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.				
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.				
ENGG532	THERMODYNAMICS	3	0	3
Thermodynamics deals with the study associated with details of the properties of the pure substance to adapt 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 their practical applications of thermodynamic principles in power plan.				
HUMR400	HUMAN RIGHTS	3	0	3
<p>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 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 to modern Human Rights. It makes them able to analyze what is mentioned in different kinds of Human Rights sources such 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>				
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).				
MATH502	ADVANCED MATHEMATICS	2	2	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.				
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.				
ENGG521	ENGINEERING MECHANICS	3	0	3
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.				
ENGG522	ENGINEERING ECONOMY	3	0	3
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.				
ENGG534	ELECTRONICS 1	2	2	3
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 of CE, CC and CB, dc analysis and switch circuit analysis; different biasing, Multistage Amplifiers, Differential Amplifier and CMRR.				
ENGG611	ELECTRIC CIRCUIT THEORY 2	2	2	3
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.				
MATH504	MULTIVARIATE CALCULUS	2	2	3
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 a tool in solving problems in Multivariate Calculus.				
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 a tool in solving problems in Numerical Analysis.				
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.				
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.				
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.				
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.				
ENGG627	LOGIC CIRCUIT, SWITCHING THEORY AND PROGRAMMABLE LOGIC DEVICES	3	2	4
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 and counters, programmable logic devices. Through laboratory and in-course projects, the students will creatively implement complex applications of digital logic circuits.				



MATH506	LINEAR ALGEBRA	2	2	3
This course uses 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 used as mathematical software and solutions to a variety of mathematical problems are determined.				
ENGG501	SAFETY ENGINEERING	2	0	2
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.				
ENGG533	STRENGTH OF MATERIALS	3	0	3
This course 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.				
MECH610	PNEUMATICS & ELECTRO-PNEUMATICS	2	2	3
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.				
ENGG614	CONTROL SYSTEMS	2	2	3
The course deals with the study of the concepts of control systems. It also covers the discussion of 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.				
MECH631	POWER ELECTRONICS	2	2	3
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.				
MECH633	INTRODUCTION TO FUZZY/NEURAL SYSTEM	3	2	4
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 systems. Higher level software programming will be used for critically analyzing, evaluating, and synthesizing the implemented fuzzy logic and neural networks systems.				



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.				
MECH621	LINEAR SYSTEMS	2	2	3
This course deals with detailed 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.				
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 systems 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.				
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.				
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 on various sensors used in the 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 of 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.				
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.				
MECH639	MICROCONTROLLER	2	2	3
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 projects, the students will creatively implement complex applications of microcontroller-based systems.				
MECH642	MACHINE VISION	3	2	4
This course discusses core theories, principles and concepts of machine vision devices and techniques and 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 to understand the breadth and depth of the lecturing materials. The main topics will be as: Machine vision concepts, Image acquisition, Lighting, Image formation, Image conversion, Image processing and analysis. Image enhancement, Edge detection and Image segmentation.				
MECH643	ROBOT KINEMATICS, DYNAMICS AND CONTROL	3	2	4
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 students 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.				
MECH644	MODULAR PRODUCTION SYSTEM	3	2	4
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 of 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.				
ENGG638	ENGINEERING AND PROJECT MANAGEMENT	3	0	3
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.				
MECH651	INDUSTRIAL ATTACHMENT	0	6	6
This 6-unit course is a practicum course where the students are exposed to an 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.				
MECH652	MECHATRONICS ENGINEERING DESIGN PROJECT A	0	6	3
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 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.				
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 entrepreneurs, 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.				
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 applications 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.				
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.				
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.

MECH653C	SYSTEM MODELING AND SIMULATION	2	2	3
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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.

MECH662A	WIRELESS COMMUNICATIONS	2	2	3
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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.

MECH662D	POWER PLANT	2	2	3
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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.

MECH662C	DIGITAL SIGNAL PROCESSING	2	2	3
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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.



College: College of Engineering

BSEnE PROGRAMME SPECIFICATION AY2022-2023

1. Teaching Institution	University of Technology Bahrain
2. University Department	College of Engineering
3. Programme Title	Bachelor of Science in Environmental Engineering (BSEnE)
4. Title of Final Award	Bachelor of Science in Environmental Engineering (BSEnE)
5. Mode of Attendance	Full time
6. National Qualification Framework Level and Credit	NQF Level 8 612 NQF Credits (204 ACS Credits)
7. Accreditation	
8. Other external influences	<p>Local External Influences/References Ministry of Education (MOE), Higher Education Council (HEC) Bahrain Quality Authority for Education and Training (BQA)</p> <p>International External Influences/References Accreditation Board for Engineering and Technology (ABET) American Association of Environmental Engineers (AAEE)</p>
9. Date of production/revision of this specification	September 2023

10. Aims of the Programme

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 the form of practicum and all students must undertake a design course in the form of a 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:

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

1. pursue careers in Environmental Engineering or related fields towards the improvement of engineering practice;

2. engage in lifelong learning towards completion of advanced/continuing education/industrial training or other learning opportunities; and
3. demonstrate professional success via promotions and/or positions of increasing responsibility.

11. Learning Outcomes, Teaching, Learning and Assessment Methods

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

1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics;
2. apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, global, cultural, social, environmental, and economic factors;
3. communicate effectively with a range of audiences;
4. recognise 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. function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives;
6. develop and conduct appropriate experimentation, analyse and interpret data, and use engineering judgment to draw conclusions; and
7. 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, 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 ENVIRONMENTAL ENGINEERING (BSEnE) CURRICULUM PLAN EFFECTIVE AY2022-2023

REMEDIAL CLASSES

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
ENGL500	English Foundation Course	12	0	0	-
MATH500	Remedial Mathematics	3	0	0	-
TOTAL				0	

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	2	2	3	-
ENGL611	English Communication Skills 1	3	0	3	-
CSCI611A	Introduction to Computing	2	2	3	-
SOCI600	Sociology	3	0	3	-
EUTH500	Euthenics 1	1	0	0	-
TOTAL				18	

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	CSCI611A
EUTH501	Euthenics 2	1	0	0	EUTH500
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
MATH632	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	MATH612
HIST600	History of Bahrain and GCC Region	3	0	3	-
TOTAL				18	



SECOND YEAR
FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
HUMR600	Human Rights	3	0	3	SOCI600
CHEM711	Analytical Chemistry	3	2	4	CHEM631
MATH712	Integral Calculus with Differential	5	0	5	MATH632
ENGL711	Technical Writing	3	0	3	ENGL621
PHYS631	University Physics 1	2	2	3	MATH632
TOTAL				18	

SECOND TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
MATH621	Probability and Statistics	3	0	3	MATH632
ENGG724	Thermodynamics	3	0	3	PHYS631
CHEM722	Environmental Biochemistry	2	2	3	SCIE611
ENGG722	Engineering Economy	3	0	3	MATH611
PHYS711	University Physics 2	2	2	3	PHYS631
ENVE721	Fundamentals of Environmental	3	0	3	SCIE611
TOTAL				18	

THIRD TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
MATH733	Linear Algebra	2	2	3	MATH712
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	SCIE631
ENGG725	Engineering Mechanics	3	0	3	PHYS711
TOTAL				17	

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	MATH712
ENGG814	Engineering Materials	3	0	3	CHEM611
ENVE811	Unit Operation: Heat Transfer	2	2	3	ENGG721
ENGG852	Professional Ethics in Engineering	1	0	1	-
CHEM812	Atmospheric Chemistry	3	0	3	CHEM631
TOTAL				16	

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
TOTAL				18	

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	3	0	3	ENVE721
ENVE835	ENVE Unit Operation: Biological	2	2	3	SCIE723
ENVE836	Technopreneurship	3	0	3	ENGG722
TOTAL				18	

FOURTH YEAR

FIRST TRIMESTER

Course Code	Course Title	Lec Hrs	Lab Hrs	Credit Units	Prerequisites
ENVE837	Methods of Research with Inferential	3	0	3	MATH621
ENVE838	Project and Engineering Management	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
TOTAL				18	

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 th year
ENVE843	Environmental Engineering Project Design A	3	0	3	ENVE838
TOTAL				15	

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
TOTAL				12	
Grand Total				204	

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
TOTAL		9

13. Awards and Credits	
Degree/ Certificate Awarded	Bachelor's Degree
Total Units for Degree	204
Total Trimesters Completed	12
14. Personal Development Planning	
<ol style="list-style-type: none"> 1. Conduct in-house trainings and seminars related to electronics, software engineering, information systems, AutoCAD, programmable logic controllers, CAD/CAM technology, microprocessor systems, automation systems and robotics technology. 2. Send faculty members in local and international conferences, seminars and trainings related to their fields of specialization. 3. Support faculty members in their conduct of research projects aligned to the College's research thrusts and priorities. 4. Establish partnerships and linkages where research collaborations can be made. 5. Encourage publication of research outputs and dissemination of results through participation in international research conferences and fora. 	
15. Admission Criteria	
Refer to pages 19-24 in this document.	
It can be viewed online through https://www.utb.edu.bh/wp-content/uploads/2024/02/BSEnE-Programme-Specification-Effective-2022-2023.pdf .	
16. CGPA Requirement for Graduation	
2.0 out of 4.0	
17. Key Resources of information about the programme	
Included in the University Catalogue, uploaded to the UTB website	



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 Chemistry	(C)	✓					✓	✓
	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 Microbiology	(C)	✓						
	ENGG724	Engineering Mechanics	(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
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 Laws and Regulations	(C)		✓	✓	✓	✓		✓
	ENVE834	Environmental Quality Systems Engineering	(C)	✓	✓					
	ENVE835	Unit Operation: Biological Treatment	(C)	✓	✓			✓	✓	
	ENVE836	Technopeneurship	(C)			✓	✓			✓
Year 4 1st Tri	ENVE837	Methods of Research with Inferential Statistics	(C)		✓	✓				✓
	ENVE838	Project and Engineering Management (Risk Analysis)	(C)	✓			✓		✓	
	ENVE839	Engineering Hydrology	(C)	✓	✓					
	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 Impact Assessment	(C)			✓	✓			✓
	ENVE847	Environmental Engineering Project Design B	(C)	✓	✓		✓	✓	✓	✓



BACHELOR OF SCIENCE IN ENVIRONMENTAL ENGINEERING (BSEnE)
CURRICULUM PLAN EFFECTIVE AY2022-2023

COURSES DESCRIPTION

Course Code	Course Title	Lec Hrs	Lab Hrs	Units
MATH500	REMEDIAL MATHEMATICS	3	0	0
<p>This course is a foundation in mathematics focusing on the building of the knowledge and skills and understanding to solve problems in college algebra and trigonometry. It deals with the topics on equations and Inequalities; functions and graphs; polynomial and rational Functions; exponential and logarithmic functions; trigonometric functions; trigonometric identities and equations; application of trigonometry; systems of equations and inequalities; and matrices. It also includes the application of the mathematical thinking process.</p>				
ENGL500	ENGLISH FOUNDATION COURSE	9	0	0
<p>This course is a required foundation course for entering students whose English language skills need further improvement and enhancement to be able to cope with the university's academic courses. This course introduces the students to the English language where they get involved and engaged in the learning process. It utilizes an integrated approach in developing the students' English macro communication skills in speaking, listening, grammar, and vocabulary in one phase (pre-intermediate) which will serve as the benchmark for the next level first year English course. Furthermore, the course intensifies its intended learning objectives with the comprehensive utilization of audio-lingual presentations, includes information related to dictionary use, basic grammar rules, daily use vocabulary words through a variety of contexts, written responses, writing structures, settings of writing, and the process of forming written and spoken communications. Hence, the students are expected to gain more knowledge to communicate effectively in English.</p>				
MATH611	COLLEGE ALGEBRA	3	0	3
<p>This course is designed to familiarize learners with the main theories, principles, and concepts of college algebra that are useful in the analysis and simplification of basic and some advanced mathematical problems. Content includes functions that are polynomial, rational, exponential, logarithmic and related equations. Sketching graphs, Matrices, determinants, progressions and inequalities as applied to engineering.</p>				
ENGG611	ENGINEERING DRAWING	2	2	3
<p>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.</p>				
CHEM611	GENERAL CHEMISTRY 1	2	2	3
<p>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.</p>				



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 a detailed knowledge and understanding of computer hardware and software. It includes the discussion of number systems, networking and the 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 browser 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 to a detailed approach to studying society. It intends to give emphasis on the sociological perspectives, relationships with other social sciences, and the main figures in sociological development, including an introduction to culture, the transformation of societies, the 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 roles 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 of explanations based on evidence through inquiry-based laboratory activities to provide insight into scientific method.				
CHEM621	INORGANIC CHEMISTRY	2	2	3
	INORGANIC CHEMISTRY	2	2	3
This course 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				



<p>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.</p>				
ENGL611	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>				
ARAB600	ARABIC LANGUAGE	3	0	3
<p>على دراسة أساسيات اللغة العربية كقراءة وتحليل و نقد وبيان خصائص النصوص المطلوبة التي تتناول ARAB400 مركز مقرر 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
<p>This course covers detailed knowledge of problem solving and algorithm development, with emphasis 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 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>				
EUTH401	EUTHENICS 2	1	0	0
<p>This course is designed to provide 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>				
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 rates).</p>				



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 emphasis on practical speaking experiences and analysis of audience psychology, which are deemed applicable in diverse speech situations.</p>				
CHEM621	ORGANIC CHEMISTRY	3	2	4
<p>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.</p>				
HUMR600	HUMAN RIGHTS	3	0	3
<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 to modern Human Rights. It makes them able to analyze what is mentioned in different kinds of Human Rights sources such 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>دراسة تاريخ مملكة البحرين و منطقة الخليج العربي و يُظهر تعداد اللاحداث الهامة في البحرين و منطقة HIST400 يتناول مقرر الخليج العربي و آثارها على الوضع الراهن ، و يغطي الأهمية الاستراتيجية و المكانية للبحرين للبحرين بدءا من الحضارات القديمة و مروراً إلى العهد الاسلامي، و الاحتلال البرتغالي، و صراع القوى في القرن السابع عشر، و صعود قبيلة العتوب، و البحرين تحت الحماية البريطانية و إبرام 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 law, reform project by</p>				



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
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
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
This course provides the students with knowledge and understanding of core concepts, theories and principles in evaluating definite and indefinite integrals and their 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
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
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
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
Thermodynamics deals with the study associated with details of the properties of the pure substance to adapt 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 their practical applications of thermodynamic principles in power plan.				
CHEM722	ENVIRONMENTAL BIOCHEMISTRY	2	2	3
This course provides students with knowledge of 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
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
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
This is an introductory course that presents general concepts and topics on the 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
This course uses 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 used as mathematical software and solutions to a variety of mathematical problems are determined.				
CHEM723	PHYSICAL CHEMISTRY	3	2	4
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		3
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
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
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
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
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
This course deals with the study of 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
<p>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.</p>				
ENGG811	PROFESSIONAL ETHICS AND ENGINEERING LAWS	1	0	1
<p>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.</p>				
CHEM811	ATMOSPHERIC CHEMISTRY	3	0	3
<p>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.</p>				
ENVE821	WATER RESOURCES ENGINEERING	3	0	3
<p>This course 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.</p>				
ENVE822	INSTRUMENTATION AND CONTROL	2	2	3
<p>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.</p>				
ENVE823	UNIT OPERATION: MASS TRANSFER	2	2	3
<p>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.</p>				



MATH732	NUMERICAL METHODS AND ANALYSIS	2	2	3
<p>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 a tool in solving problems in Numerical Analysis.</p>				
ENVE824	AIR POLLUTION AND PREVENTION	3	0	3
<p>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.</p>				
ENVE825	UNIT OPERATION: PHYSICAL AND CHEMICAL TREATMENT	2	2	3
<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
<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
<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
This course is an overview of environmental law and its development, legal and administrative structures for their implementation from the international, regional and national perspectives, focusing 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.				
ENVE834	ENVIRONMENTAL QUALITY SYSTEMS ENGINEERING	3	0	3
This course deals with the 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.				
ENVE835	ENVE UNIT OPERATION: BIOLOGICAL TREATMENT	2	2	3
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 fundamentals of microbiology into a quantifiable engineering context to describe, predict, and control behavior of 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
The course deals with the study of entrepreneurship in the IT industry by applying the core theories and principles of entrepreneurship and management in IT business. The course covers types of entrepreneurs, 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 INFERENCE STATISTICS	3	0	3
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
Introduction to techniques of risk-benefit analysis as applied to water resources and environmental engineering. Techniques of multi-objective water resource planning. 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
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 have to 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
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This course integrates core theories of process overview in oil and gas technology. Students will be provided with detailed knowledge and understanding of various main processes involved in the oil and gas exploration and provided detailed insight on various utility systems and their working principles used in oil and gas technology. The course also covers topics on the maintenance of oil and gas wells.

ENVE841	ENVIRONMENTAL PLANNING AND DESIGN	3	0	3
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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
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This 6-unit course is a practicum course where the students are exposed to an 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 students submit a final report and a performance evaluation made by the on-site supervisor.

ENVE843	ENVIRONMENTAL ENGINEERING DESIGN PROJECT A	3	0	3
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This course provides the senior engineering student with meaningful problem analysis and design experience. The project and its documentation must illustrate the 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
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This course 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
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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
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
Continuation of Environmental Engineering Design Project A by individuals or teams with submission of final reports and oral presentations.				
ENVE848	RENEWABLE ENERGY	2	2	3
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.				
ENVE849	CLIMATE AND GLOBAL WARMING	2	2	3
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.				
ENVE850	REMOTE SENSING	2	2	3
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.				
ENVE851	HAZARDOUS WASTE MANAGEMENT AND REMEDIATION	2	2	3
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.				



ENVE852	INTRODUCTION TO GIS	2	2	3	
<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>					



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