Fahad Bin Sultan University

UNIVERSITY CATALOGUE
2023 - 2024

His Majesty King Abdul Aziz Al Saud

King Salman bin Abdul Aziz Al Saud

The Custodian of the Two Holy Mosques

His Royal Highness Prince Mohammad bin Salman bin Abdul Aziz Al Saud

Crown Prince, Deputy Prime Minister and Minister of Defense

"When we speak of education in the Kingdom, we speak of building-up the country and its citizen, of promoting the country and modernizing it, and of alleviating the citizen and enabling him, for there is no cause appertaining to man, in heaven or on earth, which is more honorable than education."

His Royal Highness Prince Fahad bin Sultan bin Abdul Aziz Al Saud

Prince of Tabuk Region and Chairman of the Board of Trustees

University President's Welcome Message

Welcome to Fahad Bin Sultan University. Since its establishment in 2004, the University has committed itself to providing quality education devoted to meeting the needs of the local community and the Kingdom at large. The University offers affordable professional educational programs that can both transform the lives of individuals and be a force for societal development. Student success is vital to the University, so we strive to ensure that our programs and services are easily accessible.

As a center for quality education with strong commitment to excellence, FBSU has quested to provide generations of young men and women with challenging opportunities for successful life and bright future. The essential ingredients to rise for these challenges have been its keen commitment to offering stimulating and effective academic programs paving the way for growth and success, creating a research environment harmonious with the social and industrial needs, and fostering indispensable values and services to the local and international communities.

During the past year, FBSU established the College of Medicine with an undergraduate program in Medicine and Surgery, and launched new undergraduate programs in Law, Human Resources Management and Logistics & Supply Chain Management to add up to the recently established undergraduate programs in Renewable and Sustainable Energy Engineering. At the graduate level, FBSU has recently launched graduate programs in Human Resources Management and in Electrical Engineering.

The University is embarking on launching state-of-the-art undergraduate programs in Cyber Security, Data Science, Artificial Intelligence under the umbrella of the College of Computing, and in Mechatronics and Robotics under the umbrella of the College of Engineering.

The University is proud of providing advanced teaching, research and recreation facilities and of providing a friendly and aspiring learning environment. FBSU has recently acquired new Renewable Energy, AI, and Robotics and Mechatronics laboratories; and has furnished and/or renovated its sciences, computing and engineering labs with state-of-the-art equipment that support both teaching and research activities.

To further enhance its programs, FBSU has established, furnished and/or renovated its sciences, computing and engineering labs with state-of-the-art equipment that support both teaching and research activities. Moreover, the University is currently planning a major construction of an independent workshop for the labs of the College of Engineering and completing phase 2 of the wireless network project across its campus. The plan for the upcoming academic year is to acquire new Environmental and an Electric Power labs.

This catalogue covers all aspects of your educational experience at the University. It contains information on academic policies and regulations, programs of study, degree requirements, courses, and services for use by current graduate and undergraduate students, faculty, and administrators. We highly appreciate that current and prospective students, faculty and many other people will read this material, as well, for some understanding of University regulations, programs and culture.

I would like to seize this opportunity to acknowledge gratefully the generous support that FBSU has been receiving from the MoE and the continuous inspiration revealed to it by the directives of HRH Prince Fahad Bin Sultan, Chairman of the Board of Trustees (BoT).

Prof. Abdallah I. Husein Malkawi, Ph.D.
President

Student Responsibility for Catalogue Information

FBSU students are responsible for reading the information in this catalogue and on the university website (http://www.fbsu.edu.sa). Failure to comply with Faculty and University regulations will not exempt students from whatever consequences they may incur. Upon admission to the University, students will be assigned e-mail addresses, whence will be held responsible for checking their emails regularly for official University announcements and information.

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This catalogue and relevant updates can also be viewed online at www.fbsu.edu.sa

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UNIVERSITY ADMINISTRATION

ADMINISTRATION

University Administration

- Husein Malkawi, Abdallah I. Kh.; President
- Btoosh, Mousa; Assistant to the Chancellor for Academic Affairs and Acting Dean of College of Sciences and Humanities
- Qudah, Abdalla; Assistant to the Chancellor for Administrative and Financial Affairs and Acting Dean of Quality Assurance and Academic Accreditation Deanship
- Bani-Hani, Khaldoon; Acting Dean of College of Engineering and Acting Dean of Admission and Registration
- Shbeeb, Nadim; Acting Dean of Graduate Studies and Scientific Research
- Alhazemi, Ola; Acting Dean of Student Affairs Deanship
- Bayoud, Hussam; Acting Director of the Foundation Year Program
- Abduldaym, Majed; HR Director
- Salah, Mohammad; Acting Direcctor of Registrar
- Barake, Taha; Acting Director of Facilities
- Falah, Ahmad; Acting Director of IT Center
- Ghazzawi, Oday; Acting Director of Finance

College of Business & Management

- Rifa'i, Ahmad; Acting Dean
- Gohar, Ali; Chairperson, Accounting and Finance Department
- Al-Saafin, Yousif; Chairperson, Management, Marketing and Entrepreneurship Department, Human Resources, Logistics and Supply Chain Management
- Jayashree; Dean's Assistant for Quality Assurance

College of Computing

- Mezher, Mohammad; Acting Dean
- Elfadel, Nezar; Chairperson, Computer Engineering Department
- Ghaleb, Osama; Chairperson, Computer Science Department
- Alsenawi, Hiba; Dean's Assistant for Quality Assurance

College of Engineering

- Bani-Hani, Khaldoon A.; Acting Dean
- Diab, Aboelkasim; Chairperson, Civil Engineering Department
- Ramadan, Ali; Chairperson, Electrical Engineering Department
- Nazzal, Jamal; Chairperson, Mechanical Engineering Department
- Alai, Abdallah; Chairperson, Renewable Engineering Department
- Shetwi, Ali; Dean's Assistant for Quality Assurance

College of Medicine

- Bateeha, Ahmad; Acting Dean

College of Sciences and Humanities

- Btoosh, Mousa; Acting Dean
- Abu Atieh, Amani; Chairperson, Humanities Department
- Ladadweh, Imad; Chairperson, Natural Sciences Department
- Alsaeed, Waeed; Chairperson, Mathematics Department
- Lababidi, Rula; Chairperson, English Language and Translation Department
- Abuomar, Amer; Dean's Assistant for Quality Assurance

Foundation Year Program

- Bayoud, Hussam; Acting Director

Deanship of Graduate Studies and Scientific Research

- Shbeeb, Nadim; Acting Dean, Graduate Studies and Scientific Research

Deanship of Quality and Academic Accreditation

- Qudah, Abdalla; Acting Dean
- Sehly, Eman; Dean's Assistant and Academic Accreditation Offficer
- Salem, Ibraheem; Information Center Officer
- Sakhnini, Wissam; Auditing Officer

Deanship of Student Affairs

- Al-Hazmi, Ola; Acting Dean of Student Affairs
- Al-Mutiri, Shuaa; Student Counselor
- Matar, Jihad; Director, Sports Department - Males
- Al Atawi, Aminah; Sports Assistant, Females

Deanship of Admission and Registration

- Bani Hani, Khaldoon; Acting Dean
- Salah, Mohammad; Director
- Abu Al-Hassan; Lama; Deputy Director
- Alenizi, Abdallah; Director Assistant

Consultative Center for Studies and Community Services

- Al Balawi, Gassem; Director

Library

- Alhazmi, Ola; Acting Librarian Director
- Deif, Mohammad; Library Supervisor

President's Office

- Khaledi, Sami; Director
- Al Aqbi, Nisrine; Secretary
- Hroub, Omar; Secretary

Public Relations

- Aldosari, Mohammad; Director

Information Desk

- Al Rashidi, Kateb; Officer

Human Resources Department

- Abduldayim, Majed; HR Director
- Feras, Mohammad; Payroll System Officer
- Alrashidi, Faisal; Personnel Officer

Alumni Office

- Al-Balawi, Noura; Officer

Employment Office

- Ibrahim, Hind; Officer

Follow-up Department

- Bediwi, Nawaf; Director

Finance Department

- Ghazawi, Odey; Acting Director

Purchasing Department

- Qutishat, Ahmad; Acting Director

Warehouse

- Alatawi, Reem; Store Keeper

Copy & Mail Center

- Naif, Talal; Administrative Assistant

IT Center

- Al Falah, Ahmad; Acting Director & System Administrator
- Elij, Tharwat; Database Administrator
- Barakah, Abdullah; Moodle Administrator

Facilities Management Unit

- Barake, Taha; Acting Director
- Alodaily, Omar; Director Assistant
- Alqarni, Salha; House-keeping Supervisor - Females
- Alshehri, Saif; House-keeping Supervisor - Males

Transportation Unit

- Al-Hwaiti, Bader; Director

Security Unit

- Ghazwani, Mufreh; Acting Director

THE UNIVERSITY

THE UNIVERSITY

Background

Based on the principle of integration between private and public sectors in KSA in offering higher education services, the Ministry of Education encourages private higher education in all academic specialties. His Royal Highness Prince Fahad Bin Sultan – Prince of Tabuk Region encouraged investors to start a private university to spread culture and education in the region of Tabuk, which has a distinguished geographical location that serves the region and its surroundings.

FBSU was established in the year 1424 H in the city of Tabuk with one college, the College of Computing. At the beginning of the academic year 1427 - 28 H, a branch for girls was added and was followed by the addition of the College of Engineering and the College of Business and Management in 1428 - 29 H, the College of Sciences and Humanities in 1435-36 H, and the College of Medicine in 1444 - 45 H.

The University is governed by a Board of Trustees chaired by His Royal Highness Prince Fahad Bin Sultan Bin Abdul Aziz.

Vision

To become a leading university in the Kingdom of Saudi Arabia in teaching, research, innovation, and community service.

Mission

FBSU is committed to providing high quality education and fostering scientific research, creativity, ethical conduct, integrity, life-long learning and community engagement

Core Values

- Academic and Personal Integrity
- Lifelong Learning
- Teamwork and Collaboration
- Accountability and Transparency
- Equal Opportunities and Respect for Diversity
- Inclusion and Respect Pluralism of Opinions and Ideas
- Community Engagement

Academic Services and Facilities

The mission of the Academic Services at FBSU is to ensure that the University's mission and goals, such as academic excellence, research, community service, and other core educational values, are accomplished. FBSU provides the following facilities:

Library

Library services include print and electronic collections that provide first level resources in engineering, science, mathematics, business, computing, and humanities. The resources provide a good start to complete classroom assignments and projects, explore professional literature, pursue personal learning, and conduct research.

The library includes study areas equipped with PCs connected to the internet. Through the library webpage one can use search engines to access a number of quality information sources electronically in a full-text and full-image format and popular and scholarly journals, encyclopedias and engineering handbooks, standards, catalogs and books held by KSU Library, MoE Digital library, as well as Proquest Central and Ebrary that offer hundreds of thousands of digital titles in all disciplines. The web address for the Library Webpage is: http:// www.fbsu.edu.sa

Lab Facilities

FBSU is totally committed to providing students with a quality lab experience in order to prepare them to succeed in today's technology-based economies. As a vital hands-on component of all technology-based courses, the labs are well integrated into the curriculum giving FBSU graduates the ability to harness technology for the benefit of the institutions they work for.

FBSU also allocates computing and networking facilities to its faculty, staff, and students. These facilities are intended for teaching, learning, research and administration in support of the University's mission.

Learning Assistance Center

The Learning Assistance Center offers academic assistance in the areas of Chemistry, Computer Science, Mathematics, Physics, English, and Business. Faculty members dedicate several hours each week to tutor students and work with them on one-on-one basis on any subject the student needs. Students may also receive personal academic advisement, advice on improving study skills, and workshops/review sessions. The schedule of the Center is published at the beginning of each semester.

Deanship of Student Affairs

FBSU is dedicated to the wellbeing and development of students. The Office of Student Affairs oversees student clubs, student activities, athletics and recreation, counseling and advising, and all other student services. Through this Office, activities and services are provided to enhance, support, and complement the students' personal and educational development. The Office is open daily from 8 am to 4 pm.

This holistic approach to student education enables students to learn and practice the values of tolerance, civic and moral responsibility, inclusiveness and excellence in learning and leadership, values that best represent the mission of the University.

Counseling and Advising Center

The Counseling and Advising Center exists within the Office of Student Affairs to guarantee rendering to currently enrolled students a high quality professional service. The center provides services to students whose personal difficulties and problems interfere with their academic performance. It also assists students in formulating and achieving their educational goals through its psychological services, and assists gifted and talented students to further develop their abilities.

Counseling involves one-on-one discussions with a trained professional counselor who will listen, ask questions, and help explore options about the problems or areas of concern to the student. It is a process of self-discovery and self-knowledge.

The Center's professionally trained counselors exert all possible efforts to assist and support students with emotional concerns in a sensitive, caring, and confidential manner.

Student Activities Office

The Student Activities Office is responsible for organizing and supporting a wide range of student activities. Its mission is to help students reach their full academic potential by collaborating with faculty, staff, and the community to organize extracurricular activities that enrich students' lives in the University. Most student activities are organized by officially registered clubs and societies, with elected officers. These officers, including club president and club treasurer, play a key role in overseeing the activities and ensuring the financial state of the club. Clubs, societies and student publications are important channels for students to develop their talents. The University's clubs and societies cover a very wide range of student interests which may be in the fields of drama, music, debate, writing, art and so on.

Student organizations should submit by the end of October a tentative yearly plan indicating the number, type and nature of activities planned to take place.

Student Services Office

The activities of this Office include:

- Issuing ID cards to students and maintaining their validity.
- Issuing authenticating medical and official excuses to students, when they are absent from classes or exams.
- Preparation and maintenance of students' monthly stipend payments.
- Communication with parents/guardians of the students in matters related to their academic progress.
- Maintaining and updating the official and complete non-academic records of all students.
- Processing student complaints.

ADMISSION POLICIES AND PROCEDURES

ADMISSION POLICIES AND PROCEDURES

FBSU seeks students with a sound academic record, good personal character, strong interest to serve their communities, and eagerness to serve as professionals in allied fields. Students with the most promising overall profile will be selected to join the academic programs offered in the Colleges of Computing, Business and Management, Engineering, or Medicine.

University Admission Criteria

Applicants to FBSU must satisfy the following eligibility requirements:

- Hold a Secondary Education Certificate from KSA or any equivalent certificate attained within the past five years.
- Passed the National Skills Exam for applicants holding the Saudi Secondary Certificate.
- Be physically fit.
- Have not been dismissed from any academic institution.
- Fulfill program requirements.
- Fulfill other University requirements.

Application Process

Applicants are required to fill out an application form available at the Office of Admissions, and submit it with the following documents:

- A certified copy of the Secondary Education Certificate or an equivalent certificate.
- A certified copy of the National Skills Exam results for applicants holding the Saudi Secondary Certificate.
- A copy of the Citizenship Card or the Residence Permit (Iqama) for non-Saudis.
- Four colored passport photos.
- Non-refundable application fee.

All documents received by the Office of Admissions become the property of FBSU, and thus cannot be returned. Applications for the fall semester are accepted until mid July and applications for the spring semester are accepted until mid December.

Admission Notification

Applicants who are admitted to an academic program at FBSU are notified between August 1 and August 15 for the first semester, and between January 1 and January 15 for the second semester. Admitted students will be provided with a pamphlet containing all the necessary guidelines to proceed to the registration and payment processes.

Students who have been informed of their initial acceptance but did not register during the registration period, their acceptance will be revoked unless the student requested deferred entry.

FOUNDATION YEAR PROGRAM

FOUNDATION YEAR PROGRAM

Officers

Acting Director: Hussam Bayoud

Associate Professors: Hussam Bayoud

Assistant Professors: Hussein Rabab'ah

Instructors: Mustafa Abdelrahman, Amani Abu Atieh, Feda Al-Mograbi, Waleed Dweiri, Ali Hamadsheh, Khaled Kanani, Jihan Kaiser, Anas Saraireh, Ahmad Sulaiman, AbdelRahman Tantawi, Sameer Zabadi, Sultanah AlBalwi

Assistant Instructors: Raghad Al Nufaie, Maha AlAmad

Program Overview

The Foundation Year Program (FYP) aims to prepare students to satisfy the university admission requirements. Its purpose is mainly to improve students' English language proficiency, enhance their Information Technology (IT) skills, and enrich their math knowledge. Students who successfully complete the program will be able to join an appropriate academic major.

Vision

To prepare Secondary School graduates for a smooth transition into university education.

Mission

To provide quality instruction in English Language, Math, and IT to all students who have chosen FBSU as their academic institution for higher education.

Admission

It is important to note that admission of students to the FYP and FBSU will be usually in the first semester, and possibly in the second semester, but not in the summer. Each student is required to take placement tests in English, IT, and Mathematics to determine the entry level. The tests are designed by the FYP faculty members in consultation with the AUB team specifically for this purpose. In addition, where applicable, students must satisfy the admission criteria set by the colleges to which they apply.

Structure

Students joining the FYP will be placed in one of two levels in English, IT, and Mathematics based on their performance on the corresponding placement tests. The duration of each level is one semester followed by properly designed proficiency tests.

Duration of the Program

The program could be completed in one or two semesters depending on the entry level of the learner as well as on the skills and content targets as determined by the proficiency tests. It is important, therefore, that all stakeholders realize that it takes time to acquire, reinforce, and build on literacy and content skills. Students who fail to complete the program in two years may be asked to withdraw from the University.

Placement and Promotion in the FYP

All applicants to the FYP will be assigned a learning level in each of the three subjects (English, IT, and Mathematics) based on their performance on special tests designed to measure their abilities, skills, and knowledge in these three areas.

In the English program, other specially prepared diagnostic tests may be used to test the mastery level in the various language skills and elements (listening, speaking, reading, writing, grammar, and vocabulary).

Promotion to a higher level in each of the three subjects (English, IT, Mathematics) is not automatic; learners must demonstrate that they have successfully met the instructional objectives set for the current level before moving on to a higher level. The placement test will be administered again to serve as a measurement of progress made by the learners over the period of one semester.

Learner Evaluation

In addition to traditional achievement tests and quizzes, learners will be assessed by alternative forms of assessment that are more formative and qualitative in nature, such as portfolios, focused observations with checklists, self and peer assessment, interviews, projects, oral presentations, and conferences.

Exit from the program will be determined upon achievement of a satisfactory score on well-desinged measures of proficiency in the various areas.

BRIDGING YEAR PROGRAM

BRIDGING YEAR PROGRAM

Program Overview

The Bridging Year Program (BYP) provides opportunities for students who hold a diploma from a two- or three- year technical college to pursue a Bachelor's degree at Fahad Bin Sultan University. The courses of this Program are designed to bridge the gap between a student's prior education and the requirements of the third year university courses as seamless as possible. The Program could be completed in two semesters or more depending on the entry level of the student, his/her skills, and the sought program of study. Students who pass the BYP need to spend the third and fourth years of the Bachelor's degree at FBSU.

The BYP is offered in the following majors:

- College of Business and Management: Business Administration, Accounting, Finance, Marketing, and Human Resources.
- College of Computing: Computer Science, Information Technology, and Computer Engineering.
- College of Engineering: Civil, Electrical, Mechanical Engineering, and Renewable Energy.

Vision

To prepare holders of associate degrees for smooth transition into university education.

Mission

The BYP seeks to prepare holders of associate degrees to smoothly continue their education in the appropriate majors at FBSU.

Program Objectives

The BYP has two main objectives:

1. Develop students' scientific competencies and increase their opportunities to succeed in their academic courses and future careers and
2. Improve students' English language proficiency, IT skills, and knowledge in natural and basic sciences.

Program Learning Outcomes

The BYP is designed to help students develop basic skills and competencies that will prepare them to better engage their major course of study. Students who successfully complete the BYP will be able to:

a) Effectively utilize the English language essential to their success at the University.

b) Demonstrate the use of mathematical skills to solve various mathematical problems.

c) Apply study skills necessary for success at the college level.

Admission

To be admitted to the BYP, a diploma graduate must:

1. Satisfy University admission criteria; see the "University admission criteria''.
2. Be a graduate of a KSA-accredited academic organization.
3. Have passed the official technical exam administered by the relevant governmental authority in case the Diploma was issued by a private academic institution.
4. Have a Secondary School degree (scientific stream) for admission to the Colleges of Computing and Engineering.

Duration of the Program

The duration of the BYP is normally one or two semesters depending on the entry level of the student, his/her performance, and the sought program of study.

GENERAL ACADEMIC INFORMATION, POLICIES AND GUIDELINES

GENERAL ACADEMIC INFORMATION AND POLICIES

Registration

Academic Advisors

Each student is assigned an academic advisor who assists them in registration and selection of courses. The advisor is also involved in counseling on academic difficulties or problems encountered, and in monitoring advisees' academic progress.

The academic advisor is a faculty member in the academic division in which the student is enrolled; "They explain the university rules to students, assist them in selecting and registering for classes, and maintain the confidentiality of students' information unless given explicit permission to share. Additionally, they monitor students' progress and extend assistance when required. Furthermore, they provide valuable information regarding courses, tests, and registration.

Registration Procedures

Course registration can be done through the Office of the Registrar, the Department to which the student belongs, or the online registration system by the student himself/herself. A student Identification Number (ID) is necessary for registration. Early registration for all semesters normally starts in the last third of the preceding semester and continues for about one week after classes begin (the exact period is specified in the Academic Calendar posted on the FBSU website http://www.fbsu.edu.sa). A student must complete his/her own registration in person and pay the tuition fees and other charges during the registration period.

Once students have registered for classes in a semester, they may process schedule modifications during the scheduled drop/add period of that semester.

Early Registration

Early registration is required of all enrolled students who intend to continue their studies at the University during the following terms.

Late Registration

Students who, for a valid reason, cannot register for courses during the designated periods may petition for late registration, which must take place within the drop/add period specified in the academic calendar (posted on FBSU website www.fbsu.edu.sa). A late registration fee of 1,000 SAR will be assessed to students who register after the second week of the semester.

Minimum and Maximum Course Load

Course load is defined as the number of credit-hours for which a student is registered in a regular semester or a summer session. The minimum and maximum course load varies as follows:

a) The minimum and maximum academic load in a regular semester:

1. The minimum number of credit hours is (12) per semester.
2. The maximum number of credit hours is (21), according to the cumulative GPA as follows:

Cumulative Grade Point Average (GPA)	The maximum Academic load
Less than 2.00	12
2.00 - 3.99	19
4.00 - 5.00	21

b) The minimum and maximum academic loads in the summer semester are (1) and (12) credit hours, respectively.

c) The maximum academic load for a student in their last semester is (22) credit hours in the regular semester and (15) credit hours in the summer semester, provided that their cumulative grade point average is at least (2.00) out of (5.00).

d) The maximum course load for a student on probation is 13 credit hours in a regular semester and 9 credit hours in a summer semester.

Course Substitution

If a student is unable to complete the requirements of any program due to the termination of a course or when accrediting new programs that comprise courses the student has not studied, he/she can substitute a maximum of two courses with other equivalent courses. Except for exceptional cases approved by the Dept. Council, the original and substitute courses should be equivalent in terms of level, content, and credit hours. The Registrar's Office must be informed of the substitution after the student has obtained the approval of his/her advisor and the college dean.

Changing Sections

If a student wishes to change a section of a registered course, he/she may choose a section that will not create a time conflict with his/her current schedule, and must fill out the "Section Change Form". The form requires the signatures of the course instructor and the faculty advisor, and must be submitted to the Registrar's Office during the drop/add period.

Repeating a Course

A student may repeat any course. The highest grade will be the student's final grade in the course, provided that they pass the repeated course.

Auditing a Course

A student may change their course status from credit to audit based on the recommendation of the course instructor, the approval of the Department Chair offering the course, as well as the approval of the academic advisor and the Department Chair of the student's major. When auditing a course, the student must consider the following:

a) The audit status of a course may not be converted to a credit.

b) The grade of "Auditing" is not included in the semester or cumulative grade point average, and the number of its credits is not counted within the number of credits required for graduation.

c) The deadline for submitting applications to change course status to audit status to the Deanship of Admission and Registration is the same as the deadline for courses withdrwal, specified in the academic calendar (www.fbsu.edu.sa)..

The student must fill out the "Audit Form". The approved form is submitted to the Registrar's Office during the courses withdrwal period.

Adding and Dropping Courses

During the add/drop period, a student may change their schedule by adding or dropping courses after obtaining the approval of their academic advisor, provided adherence to the minimum and maximum academic load rules. The add/drop period is the first two weeks of the semester (first week for the summer semester). However, the add/drop period may be extended by the University Council if deemed necessary. In all cases, the following conditions must be met:

a) Dropping a course: If the course to be dropped is a co-requisite, the student must either drop both co-requisite courses or complete both courses concurrently.

b) Adding a course: To add a course, the course load must not exceed the maximum load allowed for registration, all course registration requirements must be met, and the section must be available. The added course(s) must not be in conflict with other register courses in the student schedules.

Throughout the add/drop period, the dropped courses will not appear on the student's transcript. Courses dropped beyond this period (until the final course drop deadline) will appear as (W) on the student's permanent academic record.

Adding/dropping courses is performed using a "Course Drop/Add Form", which may be obtained online on the SIS of from the Registrar's Office. The form requires the approval of student's academic advisor, and must be submitted to the Registrar's Office during the drop/add period of the respective semester.

Important Reminders:

1. The process for dropping courses may not be used to officially withdraw from university after the first day of the semester.
2. Non-attendance does not constitute a drop or a withdrawal from a course.
3. Any student receiving a scholarship from FBSU is required to maintain a full- time status of 12-credits load in a regular semester (6 credits in a summer session); otherwise, he/she loses the scholarship.

Attendance and Withdrawals

Class Attendance

At FBSU, punctuality and regular attendance are essential expectations for all students. Students are required to attend all classes, laboratories, and fieldwork sessions as per the timetable schedule. Instructors diligently record attendance at the start of each session. Tardiness is strongly discouraged, and students who arrive late or leave early without proper justification will be marked as absent. It is the responsibility of absent students to catch up on missed work and announcements. Instructors are not obligated to provide substitute assignments, quizzes, or exams for absentees, except for excused absences such as medical leaves or college-approved emergencies. Any missed laboratory or fieldwork must be made up.

To promote attendance and reduce withdrawals, instructors maintain accurate attendance records and notify students, considering privacy rights, when absences reach 15% of scheduled sessions. Students are permitted up to 25% absence in a course, whether excused or unexcused. If a student's absences (excused or unexcused) exceed the allowed limit based on the number specified for the course, as indicated in the following table, the student will be barred from continuing the course, denied entrance to the respective final examination, and given the grade (DN) in the course.

Course Contact Hours	Warning	Denial (DN)
Two hours weekly	5 or more	7 or more
Three hours weekly	7 or more	10 or more
Four hours weekly	9 or more	13 or more
Six hours weekly	12 or more	19 or more

If a student is marked as (DN) in a course due to the number of absences in the lectures and practical lessons specified for the course, then the (DN) cannot be removed, and the student cannot be allowed to take the final exam. However, if presented with a compelling execuse, the College Dean may grant an exception to this rule, in accordance with the procedures followed at the university.

Withdrawal from Courses

A student may withdraw from one or more courses. The governing rules of a course withdrawal are as follows:

1. If a student completes a request to withdraw from a course (drop a course) before the end of the add/drop period, the course will be dropped without affecting the academic transcript.
2. If a student completes the request to withdraw from a course after the end of the add/drop period and before the end of the thirteenth week of the semester (before the end of the sixth week of the summer semester), the course will be dropped, and the student will be given a grade of Withdrawn (W). If the student received a grade of (DN) in one or more courses, the grade remains unchanged.
3. A withdrawal request is not allowed after the end of the thirteenth week of the semester (the sixth week of the summer semester); however and in exceptional cases, the College Council may make an exception for such cases, provided that the request is made before the end of the fourteenth week of the semester (the seventh week of the summer semester).
4. A student cannot withdraw or be forced to withdraw from a course if this results in the student being registered for less than 12 credits (in a regular term) unless approved by the respective college dean.
5. The courses with previous requirements or concurrent requirements must be taken into consideration when withdrawing a course and an exemption may be made with the approval of the College Academic Committee.
6. The tuition fees are not affected by courses withdrawal since withdrawn courses are not refundable.

Withdrawal from a course is performed using the "Courses Withdrawal Application Form" bearing the signatures of the course instructor and the academic advisor.

Withdrawal from a Semester

A student may withdraw for a semester or summer semester without being considered to have failed the courses, provided that the withdrawal period is counted within the period necessary to complete the graduation requirements, according to the following:

1. If the student completes the withdrawal request before the end of the second week of the semester (before the end of the first week of the summer semester), all courses will be dropped for the student without affecting the student's academic transcript.
2. If the student completes the withdrawal request after the end of the second week of the semester (after the end of the first week of the summer semester) and before the end of the thirteenth week of the semester (before the end of the sixth week of the summer semester), all courses will be dropped for the student, and the student will be given grade of (W) in the registered courses. If the student received a grade of (DN) in one or more courses, the grade (DN) remains unchanged.
3. A withdrawal request is not allowed after the end of the thirteenth week of the semester (the sixth week of the summer semester), except for exceptional cases. The College Council may make an exception for such cases, provided that the request is made before the end of the fourteenth week of the semester (the seventh week of the summer semester).
4. A student is allowed to withdraw from a maximum of four consecutive or separate semesters, and the Deanship of Admission and Registration may make an exception based on the College's recommendation.

5. Withdrawal from a semester is subject to the University's refund policy.
6. A withdrawn semester is considered as a postponed semester to which the limits for number of postponed semesters in the Withdrawal and Postponement of Study Policy apply.
7. Withdrawn semesters are counted as part of the maximum duration of study for the program.

A student may apply to withdraw from the semester latest by the course withdrawal deadline. Application for withdrawal after the course withdrawal deadline announced in the University Calendar needs the approval of the Dean of the College. The student must fill the "Semester Withdrawal Application Form" from the Registrar's Office.

Withdrawal from University

A student may apply to withdraw from the University at any time. The student should fill the "University Withdrawal Application Form" that can be obtained from the Registrar's Office. The student should follow the student clearance procedure after settling his/her financial account at the Department of Finance.

Postponement and Interruption of Study

A student may request to postpone their studies for an academic level, semester, or a full academic year for reasons that are accepted by the entity designated by the University Council. The rules governing the postponement and interruption of studies are:

1. A student may postpone their studies for a maximum of four consecutive or non-consecutive semesters. The Deanship of Admission and Registration may make an exception when necessary, based on the College's recommendation.
2. A completed postponement application must be submitted before the beginning of the semester.
3. The postponed period is not included in the period required for completing the program degree.
4. The University Council or any other body to which it delegates its authority may cancel a student's enrollment if the student discontinues studying for a semester without submitting a request for postponement or withdrawal. A student whose enrollment is cancelled may apply for re-enrollment using the same university ID number and academic transcript that have been obtained before the cancellation of the enrollment.

A completed postponement application must be submitted before the beginning of the semester. If a student interrupts his/her studies without submitting a postponement application, he/she will be dismissed from the University. The University Council may make exceptions when it deems necessary.

A student is not considered to have interrupted his/her studies during those semesters when he/she is a visiting student at another university.

Conditions for Readmission

Students who withdraw from FBSU with a good academic standing are granted readmission within a period not exceeding four regular semesters for one time only. Students who wish to return after the four-semester period, or those who were on probation, have to reapply for admission. Their applications will be re-evaluated based on the admission requirements applicable at the time of reapplication.

Conditions for Re-enrollment

A. The University Council may consider the case of a student who was dismissed from the University for disciplinary reasons and wishes to be re-enrolled, after at least three years from the issuance of the dismissal decision. The University Council may form a committee to prepare a recommendation based on the student's case.

B. A student who withdrew or whose enrollment has been suspended or or had his/her enrollment canceled due to discontinuing the studies may apply to the college for re-enrollment with the same ID number and academic transcript by following these guidelines:

   1. The student must apply for re-enrollment within four regular semesters from the date of enrollment cancelation.

   2. The College Council and the relevant authorities must approve the re-enrollment.

   3. If a student's enrollment has been cancelled for five or more semesters, the student can request to return to the university according to the following regulations:

      a) Approval of the College Council to re-enroll after considering the reasons for discontinuation, provided that he/she meets all admission requirements announced at the time of re-enrollment. Re-enrollment is done as a new student with a new student ID number, without considering the old academic transcript.

      b) The University Council or any other body to which it delegates its authority may make exceptions and approve a re-enrollment with the same ID number and academic transcript upon presentation of a valid excuse, as long as the student's full academic record is preserved .

A student can be granted re-enrollment only once. The University Council or any other body to which it delegates its authority may make exceptions when necessary. The University Council or any other body to which it delegates its authority may make exceptions and approve a re-enrollment with the same ID number and academic transcript when necessary.

Assessment and Examinations

Examinations

1. At the start of each semester, the course instructor must inform the students of the distribution of grades for their semester work based on the dates of the tests and the information included in the course description.

2. The semester work score is calculated out of 60% of the total course score, and the final exam score is calculated out of 40% of the total course score. An exception can be made for any course based on the college council recommendation.

3. The course instructor determines the assessment methods. The assessment methods should be specified in the course specification in accordance with the course learning outcomes.

4. Courses are evaluated by at least two written examinations, practical work, term and research papers, reports and presentations. All examinations, excluding the finals, are scheduled by the instructors. The course teacher is obligated to announce the results of the semester exams within two weeks from the date of taking the exam. The course teacher is also obligated to show the students their answer sheets for the semester test after announcing its result and comparing it with the model answer for the test.

5. The students' results of all semester works, excluding the final exam, must be disclosed before the last day of the final course withdrawal deadline so that a student can decide whether to withdraw from the course or not.

6. In the event of cheating, attempting to cheat, or violating any of the rules and regulations of the exams, the rules and policies of Student Behavior and Discipline shall be applied.

Final Exams

1. The final exam for a course is held once, and the University Council may make an exception according to the nature of the course, based on the recommendation of the College Council and the proposal of the Department Council.
2. The Deanship of Admission and Registration, in coordination with the colleges, schedules final exams and ensures that the student is not examined in more than two courses a day. The Deanship of Admission and Registration has the right to make exceptions in certain cases after coordination with the concerned college. Students who have more than two Final Exams scheduled on the same day may seek permission to have the additional exam(s) rescheduled.
3. The final exam schedule indicates the date, time and location of all examinations.
4. The duration of the final exam is not less than two hours. The College Dean may make an exception to this rule upon the recommendation of the Department Chair.
5. It is permissible to request a change in the final exam schedule for a course based on the proposal of the course instructor and the recommendation of the Department Chair and College Dean for valid reasons. The Deanship of Admission and Registration may approve the request, considering that the proposed date should be during the final exams period.
6. All course instructors and students must adhere to the final exam schedule prepared by the Deanship of Admission and Registration.
7. The student is not permitted to enter the final exam half an hour after the beginning of the exam, or if another student has already left the exam hall. Additionally, students are not allowed to leave the exam hall before an hour has elapsed.
8. For courses that do not require final exams according to their specification, the course instructor must give the students alternative tests or assignments according to the assessment methods stated in the course specification.
9. The Deanship of Admission and Registration follows up the process of monitoring and submitting grades.
10. A student who is absent from a final examination will be given a zero score for that examination. Their grade in the course will be calculated based on the classwork score they obtained over the semester.

Grade Policy

1. At least 60% of the total course grade should be allocated to written examinations, with 40% assigned to the final exam with emphasis on practical work and projects for the remaining percentage. Any grading scenario that does not meet this policy should be cleared with the dean early in the semester.
2. A certain portion of the final grade will be assigned for class participation among other possible course requirements (e.g., term paper, project, homework, etc.).
3. The course's final grade must be recorded within a maximum period of 48 hours from the time of the final exam in line with the approved academic calendar of the university and the last day for submission of all grades. The Deanship of Admission and Registration may make a written exception if needed.
4. It is not possible to modify the a student's grade or score of a course without a clear and acceptable justification, and written approval from the College Dean based on a report from the course

instructor and the recommendation of the Department Chair.

All final grades must be submitted by the instructor to the Registrar's Office by the deadline specified. The grades through grade rosters must be signed by the course instructor, the department chairperson and the college dean.

Make-Up Examinations

If a student misses an examination, other than the final, the instructor will make arrangements for a make-up examination if the student submits an excuse for his/her absence approved by the respective department chair.

If a student misses a final exam and does not present a compelling excuse for his/her absence, he/she will get a grade of zero on that exam. The rules governing make-up of a final exam are:

1. The student submits a request for the make-up exam to the College Dean of the respective course within the first two weeks of the following regular semester.
2. The College Council may choose to accept their excuse and allow them to take a make-up exam.
3. If the request is approved by College Council, the course instructor prepares and holds the make-up exam no later than the end of the next semester.
4. The course instructor submits a grade alteration request form based on the exam result. The grade shall be approved by the College Dean before submitting it to the Deanship of Admission and Registration.
5. In case the make-up exam is not taken during the following semester, the student will have a score of zero on that exam, and their grade in that academic course will be calculated based on the classwork score that they obtained over the semester.

Reviewing a Final Course Grade

A Student may appeal the final examination score of a course by filling out a form for re-grading the final exam and submitting it to the College Dean of the respective course, provided the application must be submitted within a period not exceeding 15 days from the approval of the final result.

The Dean of the respective college will transfer the application to the Chair of the relevant department who will (within two working days) will transfer the application to the course instructor for reviewing the final exam paper of the student and recommends the modification to the grade, if any, to the Chair of the Department, according to the following rules:

a) The Department Chair must ensure the grading is precise and that grades are accurately recorded. If the grades were recorded inaccurately, the grade must be modified, and it will not be counted among the number of re-grading requests.

b) However, if the grades are recorded correctly, and the student is still not satisfied with their grade, the Department Chair will ask the course instructor for the student's final exam sheet and the key answer sheet. The Department Chair will present the two sheets to the student for comparison. If the student is convinced of the grading, they will sign the form of agreement, and the request will be preserved.

c) If the student is not convinced of the course instructor's grading, the Department Chair forms a committee of two instructors who are specialized in the topics of the course, provided that the course instructor is not among the committee, to re-grade the student's answer sheet.

d) If the Department Chair, Vice Dean, or the Dean is the teacher of the course for which the

appeal is made, the Vice Dean, Dean, or President, respectively will be responsible for conducting (a) and (b) above.

e) The committee will submit the result of the re-grading to the Department Chair (or the responsible person as stated in paragraph d) containing the decision on whether to amend the student's grade or to reject the appeal. The grade must be modified only if the result of the re-grading will change the student's grade or result in passing the course. Then, the Department Chair must submit the form that includes the re-grading result to the College Dean.

f) If the committee's decision was to alter the grade, the student's grade will be modified directly according to the mechanism used for grade alteration, and this decision must be considered final.

g) The student must be notified of the decision by the Department Chair.

h) With regard to written midterm exams, each College Council will set special rules for re-grading, considering that students may use their right to appeal as long as it is done before the start of the final exams period.

Change of Grade

It is not possible to modify the a student's grade or score of a course after the submission of the final grades to the Registrar's Office without a clear and acceptable justification, and written approval from the College Dean based on a report from the course instructor and the recommendation of the Department Chair.

The Registrar's Office should be informed of the change of grade no later than the beginning of the final examinations for the following semester.

Grading System and Codes

Grade	Points	Letter Grade	Grade Interpretation
95-100	5.00	A+	Outstanding
90-94	4.75	A	Excellent
85-89	4.50	B+	Superior
80-84	4.00	B	Very Good
75-79	3.50	C+	Above Average
70-74	3.00	C	Good
65-69	2.50	D+	High Pass
60-64	2.00	D	Pass
Below 60	1.00	F	Fail
AU			Audit
DN			Denied
DS			Disciplinary Action
NP			No grade-Pass (Not considered in GPA Calculation)
NF			No grade-Fail (Not considered in GPA Calculation)
IC			Incomplete
IP			In Progress
W			Withdrawn
WF			Withdrawn - Fail
WP			Withdrawn – Pass
T			Transfer

Work In Progress

Based on the recommendations of the course instructor, the Department Council that offers the course may allow a student to complete the requirements of any course in the following semester, next academic level, or the following academic year for colleges or institutes that apply the full academic year. In such a case, an In Progress (IP) grade is recorded in the student's academic transcript. The student's grade in the course will not be included in the calculation of the semester or cumulative GPA unless the requirements for that course have been completed. If the period referred to in this article has passed and the In Progress (IP) grade has not been changed in the student record due to their failure to complete it, it will be changed to a grade of Fail (F) and will be included in the calculation of the semester and cumulative GPAs.

The rules of implementation of the work in progress for In-Progress grade for a none-research based course is as

1. Upon the approval of the Department Council, the course instructor will assign an In Progress (IP) grade to the student after specifying the scope of work and the time necessary to complete the course requirements.
2. The course instructor should submit a request to change the student's grade based on what they have completed, which will be approved by the College Dean.
3. If the instructor does not change the In Progress (IP) grade within the specified period, the Deanship of Admission and Registration will change the grade to Fail (F) and inform the student and the Department Chairperson.
4. If a student has registered in the semester following the one in which they obtained an (IP) grade in one of the courses, and has not completed that course requirements, then the previous grade will be changed to Fail (F) by the Deanship of Admission and Registration.
5. Having an (IP) grade results in the student's general grade being listed as pending during that semester, which includes being pending to be included in the Dean's list.
6. No student is allowed to register for a course if they have obtained an In Progress (IP) grade in its pre-requisite course, unless approved by the Department Chair of the registered course.

If a research-based course requires more than one semester to complete, the student will receive a grade of In-Progress (IP). Once the course is completed, the student will receive the grade they have earned. If the student fails to complete the course within the specified time, the Department Council responsible for the course may approve assigning an Incomplete (IC) grade to the student's transcript for that course.

The rules of implementation of the work in progress grade (IP) of a research-based course are as follows:

1. Upon the approval of the Department Council, the course instructor assigns an In-Progress (IP) grade to the student after specifying the scope of work and the time necessary to complete the course requirements.
2. The course instructor will change the student's grade after completing the course, and the final grade will be approved by the Department Chair and the College Dean before being submitted to the Deanship of Admission and Registration.
3. Having In-Progress (IP) grade results in having the student's general grade as pending during that semester, which includes being pending to be included in the Dean's list.
4. If the student was unable to complete the course in the specified time, the Department Council responsible for the course may assign an Incomplete (IC) grade to the student, and the rules regarding the Incomplete work (IC) grade shall be applied.

Incomplete Work

If the work for a course is not completed by the date on which the semester ends, the following procedures will apply:

1. To secure permission to complete the work for a course, a student must submit a valid excuse to the instructor and the Department Council at least two weeks before the date of the scheduled final exam of the course.
2. Incomplete course work will be reported as an "IC" followed by a numerical grade reflecting the evaluation of the student available at the end of the semester. This evaluation is to be based on a grade of zero on all missed work. The student grade will not be included in the calculation of the cumulative or semester GPA.
3. Students permitted to complete work for a course must do so by the end of the following regular semester. After the incomplete work is done and evaluated by the faculty member, a grade change will be considered by the Department Council and a new grade is reported to the Office of the Registrar.
4. If no valid excuse is presented and the work, if permitted, is not completed within the time limits specified above, the "IC" will be changed, and the numerical grade available becomes the final grade in the course.
5. For the purposes of averaging, the numerical grade will not be used, until changed through the procedure set above.
6. It is the responsibility of the student to find out from his/her instructor the specific dates by which requirements must be fulfilled. The deadline for submission of incomplete grades by the instructor is within 72 hours after a student has completed the course work.

Failing and Repeating Courses

Failing Courses

If a student fails a course, no re-examination will be permitted. A student who fails a required course must repeat the course at the earliest opportunity. A student who fails an elective course is not required to repeat it as long as he/she can achieve the minimum cumulative average and the minimum number of credits required for graduation. However, the grade of the non-repeated course will be included in tallying the cumulative GPA.

Repeating Courses

1. A student who fails a required course must repeat it. Should a student repeat a required course and fail, he/she must repeat the course.
2. A student may repeat any course.
3. When a course is repeated, the highest grade grade will be the student's final grade in the course and will be included in tallying the cumulative GPA .
4. All grades are included in the student's transcript.

Academic Standing Report

At the end of each semester, the academic standing of the student, which reflects their achievement during their study at the University, is determined and recorded in their academic transcript.

a) Good Academic Standing: To be in good standing, a student must have a minimum cumulative and semester GPA of (2.00) out of (5.00).

b) Academic Probation: If a student's cumulative GPA is less than (2.00) out of (5.00), after final grades have been processed at the end of each regular semester, they will be placed on academic probation.

c) Academic probation can be revoked if the student achieves a cumulative GPA of no less than (2.00) out of (5.00).

Academic Dismissal

Academic dismissal is the permanent separation of a student from the University. The student is dismissed from the university in the following cases:

1. If the student receives three consecutive warnings (probations) due to a decrease in the cumulative GPA specified for graduation, according to Articles (41) and (42) of this by-law. The University Council may give the student an additional opportunity to raise the cumulative average.
2. If the student does not complete the graduation requirements within half of the period specified for graduation in addition to the program period as a maximum.

In exceptional cases, the University Council may give students who fall under the above-mentioned paragraphs (1) or (2) an exceptional opportunity that does not exceed one academic year to complete their studies.

Appeal of Academic Dismissal

A letter officially notifying the student of academic dismissal will be mailed to him/her shortly after grades are finalized for the semester. Included in this letter is the form needed to officially appeal the academic standing. A student who wishes to appeal must complete all parts of the form and return it by the specified date. The University Council reviews appeals twice a year, in the beginning of the fall semester and at the end of the spring semester, and notifies the student of the final decision the day after the review meeting. Inquiries regarding academic standings and/or the appeal process should be directed to the University Council.

Dean's Honor List

At the end of each semester, except for the summer semester, the Deanship of Admission and Registration lists the names of distinguished students in the Distinction List (Dean's Honor List) according to their semester GPAs, as follows:

1. The list contains academically distinguished students at the end of each semester except for the summer semester. Listing terms are as follows:
    a) The student who has earned a semester GPA equal to (4.75) or higher, and has completed 12 non-audit credit hours or more.
    b) Students who receive a grade less than very good (B) during the semester are not eligible for the Distinguished List (Dean's Honor List).
2. The Dean's List of each academic program is published on the home page of each college after the end of each semester.
3. A letter of appreciation is issued by the Dean of the College for the distinguished students.
4. The list of distinguished students (Dean's Honor List) for each semester is announced in the fifth week of the next semester.

Transfer Policy

Transfer from another University

The transfer of a student from outside the University may be accepted under the following conditions:

1. The university or the educational institution at which the student has studied, whether inside or outside the Kingdom of Saudi Arabia, has to be licensed by the relevant authority in the country of study.
2. The university or the educational institution from which the student has transferred must be recognized by the Ministry of Education at the time of the study.
3. The student must not have been dismissed from the university they were transferred from for disciplinary reasons. If it becomes evident after a student's transfer that they were dismissed for disciplinary reasons, his/her enrollment is considered cancelled from the date of acceptance of their transfer to the university. No refund of course fees will be given.
4. The student must submit an admission application with the academic records from the university or the educational institution at which the student has studied.
5. The student must meet the admission requirements applied at the university at the time of application.
6. The student's cumulative GPA at the university they transferred from must be at least (2.00) out of (5.00).

The student file is evaluated by the Department's Academic Committee, which forwards its recommendation to the Dean of the College.

A student transferring to FBSU must register in the final four regular semesters and must earn at least 60% of his/her credits at FBSU of which a minimum of 30 credits must be in his/her major. For purposes of this requirement, two summer sessions shall be considered equivalent to one regular semester

Transferred Courses Equivalency

The College Council may equate a course or group of courses taken by a student outside the university, based on recommendations from the Departments Councils that offer the equivalent courses, provided that:

1. The college or university from which the student has transferred must be recognized by the Ministry of Education at the time of the study.
2. Courses taken as Audit cannot be transferred.
3. No more than 40% of total study plan credit units can be equated.
4. The course must be at least 70% equivalent in syllabus and content, involves the same components (Lecture, Lab, Tutorial), and have at least the same number of equivalent credit hours as the course being taught at FBSU.

The grades for the courses that are equated are not calculated within the student's cumulative GPA. However, the equivalent courses must be recorded in their academic transcript, and the courses' credit hours are counted among the hours required for graduation.

Transfer Within FBSU

A. Transfer from One College to Another at the University

A student may transfer from one college to another if s/he meets the admission requirements of the new college. A transfer application signed by the student and approved by the dean of the college the student has departed should be sent to the Dean of Admission and Registration then to the Admissions Committee of the new College at least one month before the beginning of the new semester. The Admissions Committee of the College studies the applications of the students transferring to that College and forwards its recommendations to the Dean.

All transferred credits remain unchanged in the student's record. Grades of transferred courses are preserved as well and do enter in the calculation of the student's GPA.

A transfer student must meet the residency requirement of spending a minimum of three semesters in the new College during which he/she completes a minimum of 36 credits, out of which 12 are credits in the major. For purposes of this requirement, two summer sessions shall be considered equivalent to one semester.

B. Transfer from One Major to Another within the College

A student may transfer from one major to another only after spending an entire semester in his/her current major and meeting the admission requirements of the new major. A transfer application signed by the student and approved by the Dean of the College should be sent to the Registrar's Office at least one month before the beginning of the new semester. The College Admissions Committee studies the applications of the students transfer and forwards its recommendations to the Dean.

All Transferred credits remain unchanged in the student's record. Grades of transferred courses are preserved as well and do enter in the calculation of the student's GPA.

FBSU Students Visiting Other Institutions

A student may study one or more academic courses at another university, inside or outside the Kingdom, after obtaining approval from their college, under the following rules:

1. The student must obtain approval from the concerned department council and the college Dean.
2. The university that the student wishes to enroll in outside the Kingdom must be recognized by the Ministry of Education, and the college council has the right to make an exception.
3. The courses to be studied by the visiting student must be equalized in accordance with the regulations for course equalization at the university before approving their studies at another university.
4. The course is not offered at FBSU in that semester. Under special circumstances, students may petition the College Council for exemption.
5. The student cannot study the program requirements at another university or college unless approved by the college dean.
6. The maximum number of credits must not exceed 19 credits of which no more than 9 credits are specialized/core courses. The final year project cannot be taken outside FBSU.
7. Only courses with passing grades will be recorded in the student's transcripts but will not be used in the calculation of his/her GPA.

FBSU Students Studies Abroad

An FBSU student in good academic standing, who did not transfer to FBSU from another institution and wishes to study abroad, may spend up to one year and earn up to 30 credits at a foreign university, provided that:

a) The student attains prior approval from the respective College Dean.

b) The student studies must be at an accredited university and in the same major.

c) Courses to be taken are equivalent to those required for graduation.

d) Only courses with passing grades will be recorded in the student's transcripts but will not be used in the calculation of his/her GPA.

In all cases the student must register on a full-time basis during his/her final academic year at FBSU and that a student who had spent the last two academic semesters at an external institution is not eligible to receive an FBSU-sponsored scholarship.

All MoE Rules pertaining to this issue supersede the above mentioned rules in case of conflict.

Graduation

To graduate with a Bachelor degree, students must satisfactorily complete all graduation requirements of the colleges they are enrolled in with a cumulative GPA not less than 2.0. A student must be registered for the semester at the end of which he/she graduates.

General Graduation Grade

The general grade of the grade point average (GPA) at the time of the student's graduation is based on their cumulative GPA as follows:

GPA	GRADE
At least 4.50	Excellent
At least 3.75 and less than 4.5	Very Good
At least 2.75 and less than 3.75	Good
At least 2.00 and less than 2.75	Pass

Graduation with Honors

1. First-class honors are granted to the student who has earned a cumulative GPA between 4.75 and 5.00 (out of 5.00) at the time of their graduation, and second- class honors are granted to the student who has earned a cumulative GPA of 4.25 or higher but less than 4.75 (out of 5.00) at the time of their graduation.
2. The student who is eligible for first- or second-class honors must meet the following criteria:

   a) They must not have failed any course completed at the University or any other university. This also includes visiting and transferred student.

   b) They must have completed all graduation requirements by the median time between the maximum and minimum limits for completing the degree program, as a maximum.

   c) They must have completed 60% or more of the study plan graduation requirements at FBSU.

   d) They must not have been subjected to any disciplinary action within the University

Note: *Honors read at commencement are based on credit hours and the grade point average posted as of the previous semester and are not official. Official Honors will be awarded upon posting of final grades and completion of the degree, and will be noted on the final transcript and diploma.*

Academic Records

Transcript Request

1. A student can view their academic transcript at the end of each semester through Student Information System (SIS).
2. Transcripts will not be issued unless all obligations towards the university are cleared.
3. Academic transcripts are not issued to or sent to any authority outside the University, except upon written request from the student.
4. Partial academic transcripts are not issued; rather, academic transcripts include all the grades earned by the student during his/her years of study at the University, from the date of their admission until the issue date of the records.
5. All information in the student's academic transcript must be accurate and remain confidential.

To request a transcript, the student needs to fill, sign, and return a "Transcript Request" Form to the Office of Registrar.

Disclosure of Student Records

The University may disclose routine information without prior written consent from the student like student's name, degrees received, major field(s) of study, awards received, and participation in officially recognized activities and sports.

The University will disclose other information including academic records only upon receiving written consent of the student except in the cases below:

1. Upon the request from other educational institutions, where the student seeks to enroll and/or the Ministry of Education.
2. As necessary to academic officers, academic advisors, and faculty members within the University.
3. To parents of a dependent student.
4. In compliance with a judicial order.

Academic and Intellectual Freedoms

Freedom in Classroom

Students are responsible for learning the content of the courses in which they enroll though they should be free to take reasoned exemption to the data or views offered in any course of study and reserve judgment about matters of opinion.

Students are responsible for complying with standards of academic performance required by each course in which they are enrolled. Such standards shall be communicated clearly in writing on or before the first meeting of each course. Students should have protection against prejudiced, arbitrary, and unfair academic evaluation.

Freedom of Inquiry and Expression

Students and their official organizations are free to examine, discuss questions and issues of interest to them, and to express their opinions whether in public or private.

Such freedom does not, however, permit student groups to disrupt the orderly processes of the educational environment, nor does it permit the expression of ideas in ways which violate civil or criminal laws, blatantly disregard the truth, threaten, demean, or libel others.

In expressing their views, students and their official organizations should make clear that such views are not necessarily those of the University.

Academic Integrity

Academic Integrity and honesty are central components of a student's education. Ethical conduct maintained in an academic context will eventually be taken into student's professional career. Anything less than total commitment to honesty undermines the efforts of the entire academic community. Both students and faculty are responsible for ensuring the academic integrity of the University.

Cheating

Students who use non-permissible written, verbal, or oral assistance, including that obtained from another student during examinations, in course assignments, or on projects, are guilty of cheating. Cheating is essentially fraud. It deceives others and causes them to make an assessment based on the misinterpretation of a student's actual ability, or performance. Cheating is a violation of the University's academic regulations and is subject to disciplinary action.

Plagiarism

Students who fail to credit properly ideas or materials taken from others commit plagiarism. Putting his/her name on a piece of work-any part of which is not yours- constitutes plagiarism, unless that piece is clearly marked and the work from which he/she has borrowed is fully identified. Plagiarism is a violation of the university's academic regulations and is subject to disciplinary action.

Range of Disciplinary Actions

Abusing any of the intellectual freedoms will result in disciplinary actions that correspond to the type of abuse. The possible disciplinary actions are also applicable in other situations as clarified in the student handbook.

Warning

This may be oral or written. It is a statement that the student has inadvertently violated a University regulation. The warning will be documented and recorded. Examples: attempt to cheat in an exam, littering, and smoking in prohibited areas.

Reprimand

This will be in writing. It is a statement that the student has violated a university regulation. It is intended to communicate most strongly, both the disapproval and the reprimand of the university community. Examples: inadvertent plagiarism, failure to cite sources appropriately, and inappropriate conduct in examinations.

Dean's Warning

This will be in writing. Only two Dean's warnings are allowed in a student's academic career at the University. It is recommended that any violation of the University regulations after the second Dean's warning results in consideration of suspension. Dean's warnings are normally accompanied by secondary disciplinary actions. Examples: plagiarism, academic dishonesty, in-class disruption, mental or physical harm, discrimination and harassment.

Suspension

This will be in writing and will form part of the student's permanent record (it will appear on the student's transcript). A student may be suspended for a fixed period of time during which the

student may not participate in any academic or other activities at the University. At the end of the suspension period, the student may be readmitted to the university, only upon the recommendation of the University Disciplinary Committee. Examples: cheating, theft, and vandalism.

Expulsion

This will be in writing and will form part of the student's permanent record (it will appear on the student's transcript). Expulsion denies the student the right to participate in any academic or other activities at the University for an indefinite time. Only under the most unusual circumstances, and upon the recommendation of the University Disciplinary Committee, will an expelled student be readmitted to the University. On the other hand, cases whereby other committees, e.g., the student affairs committee recommend suspension or expulsion of a student, should be referred to the University Disciplinary Committee. Example cases include: academic dishonesty, possession of dangerous weapons or materials, and endangering public safety.

Note: *Any person who maliciously lies to cover up an act sanctioned by the code of conduct will be considered an accessory after the fact and may be subject to disciplinary action*.

Student Academic Appeals and Grievance Procedures

These procedures should be used to appeal or resolve disputes concerning an academic grade or other academic decision considered by a student to be arbitrary or contrary to University policy. For the purposes of these procedures, a student is someone holding "active" registration status as the time of the alleged violation.

Appeals Process

The following procedures outline the steps of the academic appeal and/or grievance process. It is recommended but not required that the student first arrange a conference to discuss the appeal or grievance with the faculty member(s) whose action is addressed in the student's appeal or grievance. It is expected that all of the parties involved at each step of the appeals/grievance process will make a good faith effort to resolve the issues.

Step1: Department Chair. In the event that a student feels he/she has not received satisfaction from his discussion with the faculty involved or in the event that a student prefers not to discuss his/her concerns directly with the involved faculty, the student may arrange a conference to discuss the appeal or grievance with the Department Chair (or equivalent). If the department chair is the involved faculty member, this step may be skipped.

Step 2: Dean (or equivalent). In the event there is no department chair in the College or academic Unit involved, or in the event the involved faculty member is the Department Chair or Unit Director, or in the event a student still feels aggrieved after consultation with the Department Chair, he/she may ask for a review by the respective Dean (or equivalent). If the involved faculty member is the Dean of the College (or equivalent) this step may be skipped.

Step 3: Student Academic Review Committee. In the event the student is not satisfied with the results of the reviews by the Department Chair and the Dean (or equivalent) he/she may ask for a review committee to be formed. This request shall be in writing to the Coordinator of Academic Affairs Committee.

It is the responsibility of a student to initiate the appeals procedure at each step. If the appeal is pursued through Step 3, it is expected that, unless there are unusual circumstances, the request for a hearing by the Student Academic Review Committee will be submitted within 90 days from the last day of the term in which the alleged violation arose. If the student fails to pursue the matter in the manner provided by this policy, after a conference with the College Dean if applicable, the

original academic decision will be final. The student should bring to the various conferences and to the Student Academic Review Committee hearing all evidence on which he/she intends to rely.

Fees and Expenses

Costs to students in tuition and other University fees, are kept at a minimum consistent with the provision of high quality instruction and adequate facilities and equipment. The University reserves the right to change any or all fees at any time without prior notice.

Students are not permitted to enter classes at the beginning of the term until their fees are paid or special arrangements have been made with the Office of the comptroller.

Payment of Fees

1. Each FBSU student must pay all his/her tuitions and other university fees.
2. Statements of Fees are available at the Office of the Comptroller or on the FBSU website.
3. Under special circumstances, late payment of tuition fees is permitted during a period of no more than five working days after the announced deadline, and is subject to a late payment fee.
4. Checks must be issued to the order of the bank concerned using the following format: Pay to the order of (Name of Bank) - Account FBSU.
5. Students are expected to meet all financial obligations to the University by the appropriate due date. For any student who fails to promptly meet his/her financial obligations, the University reserves the right to place an encumbrance on the student's record that prevents registration for future semesters and the release of transcripts and diplomas, and also prevents access to other university services. It is each student's responsibility to be informed of all registration and fee payment dates and deadlines.

Up-to-date schedules for registration, tuition and other fees are posted on the University website and are available through the Office of the Registrar.

Refund policy

If for justifiable reasons a student withdraws after registration from either the fall or the spring semester, then fees are refunded according to the following schedule:

Before the official start of classes	100% of full tuition
During the first week of classes	75% of tuition
During the second week of classes	50% of tuition
During the third week of classes	25% of tuition

No refunds are due after the end of the third week of classes.

Scholarships and Financial Support Program

Objectives

The objective of the Scholarship and the Financial Support Program at FBSU is to help students with strong potential for academic success to pursue post-secondary higher education that would not be possible otherwise. Under this policy, scholarships will be granted to students who meet the established eligibility criteria without any form of discrimination. Scholarships and Financial Support funds come from a variety of sources as outlined below.

Scholarship Awards

Prince Sultan Scholarships

Under this program, 50 scholarships are awarded to orphans and persons with disabilities. Each scholarship covers 100% of the tuition and fees for one year, renewable for up to four years. Awards are granted to the students who satisfy the following criteria:

a) Acquired the High school certificate (Thanauia) within five years from the date of application.
b) Attained a score among the top 50 applicants.
c) Provide evidence of either being orphan or has a disability for which the university has adequate supporting facilities.
d) Provide evidence of financial need.
e) Have exemplary character and a sense of community.
f) Be the only member of the same family to apply.

Merit Scholarships Program

The aim of the Merit Scholarship Program is to promote academic excellence and create a positive competitive environment among students. Awards recipients are selected on the basis of scholastic abilities as well as character, integrity, leadership, and potential contribution to the community.

Available scholarships under this program are:

1) Prince Fahad Bin Sultan Scholarships

Under this program, up to five scholarships are awarded each year. Each scholarship covers 100% of the tuition and fees. Awards are granted to Saudi students who satisfy the following criteria:

a) Maintain a cumulative GPA of 3.00 or higher.
b) Had not violated university rules and policies.
c) All outstanding fees are paid within set deadlines.

2) Sabih Al-Masri Scholarships

Under this program, up to five scholarships are awarded each year. Each scholarship covers 100% of the tuition and fees. Awards are granted to students who satisfy the following criteria:

a) Acquired high school certificate with high grade in both “Qoodoorat” and “Tahsely”.
b) Maintains a cumulative GPA of 3.00 or higher.
c) Had not violated university rules and policies.
d) Have maintained exemplary character and a sense of community.
e) All outstanding fees are paid within university set deadlines.

Recipients of such a scholarship should contribute at least 15 hours per semester in community service.

3) Scholastic Achievement scholarship program

The purpose of the Scholastic Achievement Scholarship Program is to encourage students at FBSU to maintain and perhaps further their scholastic performance. This type of scholarship may be sponsored by individuals or agencies.

4) Individual/Institution Sponsored Scholarships

Any individual or institution may provide a set number of scholarships as an act of philanthropy. The awarding entity sets the amount and the criteria under which the scholarships are awarded pending the approval of the University.

Student Employment Program

Objectives

FBSU offers a limited number of packages under the Student Employment Program every term, excluding summer. This form of privilege is a win-win proposition: it provides some help to qualified students who need assistance with college expenses and in return, students are required to work in various campus Offices up to 15 hours per week. Students benefiting from this program can benefit from a tuition waiver to be decided by the University Council.

Eligibility Requirements

To be eligible for FBSU Student Employment Program, a student must demonstrate an evidence of need and should maintain the following average and status requirements:

a) A minimum cumulative GPA of 3.0.

b) A minimum cumulative GPA of 3.0 in the student's last full-load term.

c) Carry a minimum load of 12 credits during the term of employment.

Any student who fails to satisfy the eligibility criteria will not be granted a privilege under this program. Newly admitted students are not eligible for this program during their first term at FBSU.

Application

Students are required to submit in person a Student Employment Application by August 10th, for the Fall Term and by the end of December for the Spring Term.

Students granted employment should coordinate with the Office of Student Affairs for their work assignments.

Disqualification

Student Employment privilege will be revoked if the student:

- Does not fulfill his/her duties in a previous contract as required.
- Receives a disciplinary probation as a result of misbehavior.
- Had intentionally presented false evidence or misleading statements in the employment application. Such violations may jeopardize the student's chances of benefiting from the program in the future.

COLLEGE OF SCIENCE AND HUMANITIES

COLLEGE OF SCIENCES AND HUMANITIES

Officers

Acting Dean: Mousa Btoosh

Professors: Mousa Btoosh

Associate Professors: Husam Bayoud; Amer Abu Omar

Assistant Professors: Haidar Abdul Hamid, Waad Al-Sayed, Imad Ladadwa, Hussein Raba'ah, Dana Abdallah, Amani Abu Ateih; Yaser Ahmad, Anas Sarairah; Rola Lababdi

Lecturers: Nicolas Kollias, Joe Montavlo, Madiha Mehwish, Maryam Peterson, Salma Tabassum, Mena Kang, Shuaa Al-Mutiri, Mohammad Zaatreh, Sultanah Al-Balawi, Maha Balawi, Abeer Rweili, Ali Hamadsheh, Sameer Zabadi, Mustafa Abdelrahman, Feda Al-Mograbi, Waleed Dweiri, Ahmad Sulaiman, Nosaibah Malabnah, Maha AlAmad, Ayat Alenizi

College Overview

The College of Sciences and Humanities (CSH) plays a pivotal role in catering to the diverse student body at FBSU. It accomplishes this by providing a range of courses in fundamental sciences such as Chemistry, Physics, Mathematics, English, as well as social and cultural studies encompassing Arabic and Islamic studies, World Civilizations, and History of the Kingdom of Saudi Arabia. Furthermore, the College extends its offerings to include undergraduate programs in English Language and Translation, as well as Law.

The College of Social Sciences and Humanities (CSH) offers a myriad of interdisciplinary educational oppurtunities. In the contemporary milieu, it is imperative for graduates to demonstrate the ability to skillfully incorporate knowledge and expertise across diverse fields. The College is acutely attuned to this requirement and maintains a steadfast commitment to consistently promoting pathways for students to skillfully integrate and apply their acquired knowledge.

Vision

The college aspires to serve as an exemplary institution renowned for its unwavering dedication to excellence in both teaching and research, fostering a culture of creativity, and sustaining enduring connections with the local community.

Mission

The college is dedicated to providing high-quality programs that equip graduates for successful careers and lay a robust foundation for pursuing graduate studies in their specialized fields. Embracing a liberal arts education philosophy, the College strives to impart contemporary skills encompassing communication, critical thinking, problem-solving, and socio-cultural interaction. Furthermore, the college is committed to fostering scientific research, ethical conduct, the appreciation of individual differences, and a dedication to integrity, lifelong learning, and community service.

Goals/Objectives

The College of Sciences and Humanities (CSH) is dedicated to realizing the following goals and objectives:

1. Provide students with a solid foundation in literacy and numeracy skills.
2. Measure and enhance students' proficiency in both content and procedural knowledge.
3. Develop and improve students' communicative competencies, cognitive abilities, and social skills.
4. Instill a commitment to lifelong learning and the principles of ethical and professional conduct in students.
5. Prepare students for graduate studies in their specialized fields.

Core Values

The core values of the College of Sciences and Humanities include:

- Commitment to Excellence in Education and Research
- Upholding Accountability
- Encouraging Collaboration
- Valuing Integrity
- Promoting Ethical Leadership

Student Learning Outcomes

Upon successful completion of the CSH service courses, students are expected to have:

a) The ability to effectively use the English language essential to their success at the University.

b) A fundamental understanding of social and cultural studies.

c) A fundamental understanding of basic sciences, particularly the major principles and theories.

d) The ability to apply knowledge of mathematics, chemistry, physics and humanities.

e) The ability to understand the relationship among disciplines.

f) The ability to apply mathematical and/or basic statistical reasoning to analyze data.

g) Improved critical thinking and problem-solving skills.

Academic Programs

The College offers two undergraduate programs leading to Bachelor's Degrees in English Language and Translation (BELT) and Law. Furthermore, the College of Sciences and Humanities provides service courses to support students across all majors at FBSU in fulfilling their program requirements.

Service Courses Description

ARAB 101 Basic Academic Arabic 3(3, 0, 0)[1]

The primary aim of this course is to offer comprehensive training in fundamental Arabic grammar, syntax, and morphology. The course places a strong emphasis on equipping students with the necessary skills to effectively utilize Arabic for academic papers, official correspondence, and professional reports.

ARAB 201 Advanced Academic Arabic 3(3, 0, 0)

Prerequisite: ARAB 101

In this course, students will have the opputunity to engage in detailed textual analysis of a wide range of classical and contemporary literary and professional Arabic texts. The purpose of studying these selected texts is to enrich students' understanding and admiration of the Arabic language and its literature, while also reinforcing their analytical and writing abilities.

ASTR 150 Introduction to Astronomy 3(3, 0, 0)

Prerequisite: None

This is a basic Astronomy course that introduces students to the subject starting by a brief history on old astronomy and continues throughout the latest discoveries in the field. Despite the straightforward nature of the course, it strongly emphasizes the scientific methods as fundamental tools of understanding the physical laws that govern our universe.

CHEM 101 General Chemistry I 3(3, 0, 0)

An introduction to chemical principles covering atomic structure, chemical bonding, Molecules & Compounds, stoichiometry, gas laws, Chemical Composition, acid-base and solubility equilibria and solution.

CHEM 101L General Chemistry I Lab 1(0, 0, 2)

Pre- or co-requisite: CHEM 101

Weekly introductory applied and simulated laboratory sessions which include an introduction to chemical principles covering significant figures, accuracy and precision, chemical bonding, precipitation reactions, stoichiometry, chemical equilibrium, qualitative analysis, acid-base titration and solubility, CHEM LAB computer simulation.

CHEM 102 General Chemistry II 3(3, 0, 0)

Prerequisite: CHEM 101

This course covers the nature and composition of matter, atoms and molecules, solutions, chemical bonding and chemical structure, molecules and materials, energy and chemistry, thermodynamics, entropy and the second law, chemical kinetics, chemical equilibrium, gas laws, chemical reactions, equilibria, kinetics, electrochemistry, corrosion and redox reactions.

CHEM 150 Chemistry and Society 3(3, 0, 0)

This course provides students with a broad survey of the applications and uses of Chemistry in several aspects of daily practical life. It would cover selections from the following topics: atmospheric chemistry and global warming, chemistry of petroleum and plastics, cosmetics, pharmaceuticals and antiseptics, food and its technology, a brief introduction to the chemistry of life (Biochemistry), electrochemistry and solar cells, and even simple introduction to nanomaterials and nanotechnology.

ENGL 101 Basic Academic English I 3(3, 0, 0)

This course aims to equip students with the essential writing skills they need at sentence and paragraph levels. The course emphasizes fluency in the writing process through use of invention strategies, drafting, revising, and editing in order to produce well-organized, coherent, and unified

[1] Credits (Lecture, Tutorial, Lab)

paragraphs. It also reviews some of the basics of English grammar and provides training in reading comprehension and oral expression.

ENGL 102 Basic Academic English II 3(3, 0, 0)

Prerequisite: ENGL 101

This course aims to improve students' composition skills and enable them to identify and produce paragraphs of diverse styles. Students will also be trained in writing short expository essays of various types, including narrative, descriptive, cause and effect, and comparative essays. Furthermore, students will have the opportunity to improve oral expression through debates and discussions.

ENGL 203 Advanced Academic English I 3(3, 0, 0)

Prerequisite: ENGL 102

This course aims to improve students' effective communication and reasoning skills essential for proper comprehension and critical reading of academic texts. Students are expected to develop other useful skills such as note-taking, summarizing and outlining as well as writing expository and argumentative essays.

ENGL 204 Advanced Academic English II 3(3, 0, 0)

Prerequisite: ENGL 203

The emphasis in the course will be placed on the writing of papers independently researched by the students. Skills that have already been acquired such as comprehension, critical reading of texts, and writing expository essays will be enhanced and put to use in the researching and writing of a paper on a specific topic. Emphasis will be placed on proper referencing and documentation. Oral presentation skills and proficiency in presenting an argument will be tested and refined when students present their papers in class.

ENGL 206 Technical Writing 3(3, 0, 0)

Prerequisite: ENGL 203

This course aims to introduce students to technical writing fundamentals, stylistic elements, and applications. The course focues on practical techniques for planning, writing, and editing technical documents such as reports; proposals; abstracts; cover letters, CVs and resumes; professional correspondence (memos, emails, and letters); and instructions.

FREN 101 Basic French I 3(3, 0, 0)

This course is designed for students who have no or very little knowledge of French. It introduces fundamentals of grammar, pronunciation and vocabulary. The course will also focus on developing students' basic communication skills through classroom drills and language lab work.

STAT 100 Introduction to probability and Statistics 3(3, 0, 0)

This course provides an elementary introduction to probability and statistics with applications. Topics include: descriptive statistics, an introduction to correlation and linear regression, elementary probability, probability axioms, counting, conditional probability, the law of total probability, Bayes' theorem, independence, and an introduction to discrete and continuous random variables.

STAT 230 Probability and Statistics 3(3, 0, 0)

Prerequisite: STAT 100

This course is intended for engineering and computing students. A course on random variables, laws of probability, probability distributions, expectation and variance, moment generating functions, joint distributions, independence, probability models, Chi-square, Student's t and f distributions, estimation, confidence intervals, the central limit theorem, significance tests, regression.

MATH 100 Mathematics 3(3, 0, 0)

The course focuses on mastery of critical skills and exposure to new skills necessary for success in subsequent math courses. Topics include fundamental concepts of Algebra, exponents and radicals, fractions, ratios, percentages, linear equations and inequalities, quadratic equations, functions and graphs, polynomials and rational functions, exponential and logarithmic functions, trigonometric functions, systems of equations and complex numbers.

MATH 101 Calculus I 3(3, 0, 0)

Prerequisite: MATH 100

Calculus of one variable: limits, continuity, differentiation, chain rule, maxima and minima, curve plotting, Roll's theorem, integration by substitution, definite integrals with applications to areas, volumes and arc length, fundamental theorem of integral calculus, exponential and logarithmic functions, trigonometric functions, parametric equations, analytic geometry in space.

MATH 102 Calculus II 3(3, 0, 0)

Prerequisite: MATH 101

Methods of integration; inverse trigonometric functions; limits; sequences and series; tests for convergence; Taylor approximations; Taylor series; polar coordinates; complex numbers: Cartesian and polar representation of complex numbers, mathematical operations with complex numbers.

MATH 201 Calculus and Analytic Geometry III 3(3, 0, 0)

Prerequisite: MATH 102

Multivariable calculus: partial derivatives, directional derivatives, chain rule, tangent planes, maxima and minima, Lagrange multipliers, cylindrical and spherical coordinates, multiple integrals, substitutions, line and surface integrals, theorems of Green, Gauss and Stokes.

MATH 202 Differential Equations 3(3, 0, 0)

Prerequisite: MATH 201

First-order differential equations; linear differential equations of second and higher order; homogeneous and non-homogeneous with constant coefficients; power series solutions; Bessel functions and Legendre polynomials; Laplace transforms; inverse Laplace transforms; initial value problems; Fourier Series.

MATH 204 Mathematics for Social Sciences II 3(3, 0, 0)

Prerequisite: MATH 100

This course emphasis is on mathematical business applications of eterminants matrix inversion, Gaussian elimination, curve plotting, derivatives, maxima and minima combinatorics, methods of integration, approximations of definite integrals, differential equations, multivariable functions, partial derivatives, chain rule, constrained and unconstrained optimization.

MATH 211 Discrete Mathematics 3(3, 0, 0)

Prerequisite: MATH 100

This course covers logical reasoning, sets, relations and functions, modular arithmetic, mathematical induction, recurrence relations, counting methods, inclusion- exclusion, binomial theorem, elementary probability, introduction to graphs and trees, recursive algorithms, and some Boolean algebra.

MATH 215 Linear Algebra and Numerical Techniques 3(3, 0, 0)

Prerequisite: MATH 102

This course aims to introduce students to the main concepts of linear algebra such as Systems of linear equations and Gaussian elimination, matrices, determinants, vector spaces, subspaces, and dimensions; orthogonal projection and least-squares approximation; eigenvalues, and eigenvectors. The course also aims at providing students with numerical methods and techniques such as Number representations and round-off errors; root finding using numerical techniques;

bisection method, secant method, Newton method, and fixed-point method, integration by the Trapezoidal and Simpson rules; and solving initial value problems by Euler and Runge-Kutta methods.

MATH 225 Numerical Computing **3(3, 0, 0)**

Prerequisite: MATH 215

This course is intended for engineering and computing students. It introduces students to the formulation, methodology, and techniques for numerical solution of mathematical problems. This course covers: Root finding of nonlinear equations by using Bisection, Newton-Raphson, Fixed Point and Secant methods, approximation of functions, numerical integration and discrete summation by using Trapezoidal, Simpson, Romberg and Gauss methods, Solving initial value problems, Monte-Carlo (Simulation) methods. Implementations and analysis of the algorithms are stressed. Projects using MATLAB.

PHED 101 Physical Education 1 **1(0, 0, 1)**

This course is designed to promote the students' physical fitness through participation in a variety of individual and team activities including, but not limited to, football, volleyball, basketball and track and field. The course focuses on skills, proficiency, and playing courtesies. Students will learn the importance of being fit; improve their team-working skills and enhance collegial competitiveness, thus leading to healthier lifestyles and balanced personalities.

PHYS 101 General Physics I **3(3, 0, 0)**

Co-requisite MATH 101

Measurements, motion in one dimension, vectors, motion in two dimensions, Newton's laws with applications, work and energy, circular motion, linear momentum and collisions, rotation and angular momentum, oscillations, and gravity.

PHYS 101L General Physics I Lab **1(0, 0, 2)**

Co-requisite: PHYS 101

Basic laboratory techniques and methods; taking measurements, data evaluation and report writing with application to selected experiments related to Newtonian mechanics, vibrations, light and optics including density of metals, free fall motion, addition and resolution of vectors, conservation of linear momentum , conservation of energy, simple pendulum, Hook's law, measuring focal length, and index of refraction.

PHYS 102 General Physics II **3(3, 0, 0)**

Prerequisite: PHYS 101

Electrostatics, current, resistance, Ohm's law, Kirchhoff's laws, RC circuits, magnetostatic theory, Ampere's law, Biot-Savart law, Faraday's law, LR circuit, RLC circuits, and a qualitative discussion of Maxwell's equations.

PHYS 102L General Physics II Lab **1(0, 0, 2)**

Co-requisite: PHYS 102

Basic laboratory techniques and methods; taking measurements, data evaluation and report writing with application to selected experiments in electricity and magnetism including electrostatics, magneto-statics, Coulomb and current balance, DC and AC circuits, linear and nonlinear circuit elements, Kirchhoff's laws, oscilloscope in AC measurements, charge and discharge of a capacitor, filters, damped oscillations, inductors and measurement of magnetic induction fields.

SOCS 101 Islamic Civilization I **3(3, 0, 0)**

This course surveys of Arab Islamic civilization tracing its intellectual and cultural development from pre-Islamic times to the present. Emphasis will be placed on the major contributions of Arab Islamic civilization.

SOCS 201 Islamic Civilizations II 3(3, 0, 0)

Pre-requisite: SOCS 101

Islamic civilization; Islamic law & governance, human rights laws, state and human rights in Islam, education, ethics & morality, war, peace, aggression, self-defense theory, sovereignty, life and death, human dignity, etc.

SOCS 202 World Civilizations 3(3, 0, 0)

This course surveys of ancient Near Eastern and Medieval Civilizations and world views, starting with Mesopotamia and including the classical Greek and Roman periods up to the beginning of the Renaissance in Europe. Some emphasis is placed on Islamic civilization.

SOCS 203 The History of the Kingdom of Saudi Arabia 3(3, 0, 0)

This course sheds light on the historical foundations and roots of the Kingdom of Saudi Arabia, covering three eras and their efforts to establish unity. It examines the conditions in the Arabian Peninsula before the founding of the first Saudi State and the conflicts with opponents. The course also examines the political, administrative, urban, and educational planning of the contemporary Kingdom of Saudi Arabia. It also covers the emergence of oil and its impact on the country's growth, highlighting various manifestations of development during King Salman bin Abdulaziz's reign.

SOCS 210 Human Rights in Islam 3(3,0,0)

This course aims to introduce students to the concept of human rights and its historical development; value of humans in Islam and the manifestation of human dignity; the purpose of Islam's human rights legislation; fundamental human rights; civil rights; religious and cultural rights; economic and social rights. It also tackles punishments in Islam and the allegations raised against them; a comparison between the Islamic Declaration and the Universal Declaration of Human Rights.

PSYC 101 Psychology and Mental Health 3(3, 0, 0)

This course focuses on the behavioral, cognitive, and psychological factors that influence the individual's mental health. Students will be introduced to a variety of theories and schools in Psychology, highlighting their goals that seek to maintain better health and understanding of the self and others. The students assimilate the concepts associated with memory, learning, motivation, intelligence, personality, and preparedness. The students will be able to distinguish psychological and personality disorders, along with the possible strategies for providing assistance. The course, moreover, enhances the student's ability to determine the appropriateness of behavior in a variety of contexts.

ENGLISH LANGUAGE AND TRANSLATION PROGRAM

The curriculum is designed to grant students the Bachelor's degree of English Language and Translation upon the successful completion of the four-year program.

Program Mission

Department of English Language and Translation strives to provide high quality instruction, develop students' knowledge and practical and cognitive skills necessary, build cross-cultural competencies, conduct theoretical and applied research, render essential community services, and adhere to principles of ethics

Learning Outcomes

Upon graduation, students are expected to:

a) Demonstrate comprehension of the translation and interpretation methods, principles, and techniques necessary to translate and interpret a variety of written and spoken texts and genres from English into Arabic and vice versa.

b) Recognize, identify, and demonstrate comprehension of the major rules, theories, concepts, clues, methods, branches, periods, scholars, and challenges relevant to Arabic and English languages, linguistics, translation, cultures and civilizations, literature, and TESOL.

c) Develop logical thinking and an appreciative sense, whereby students consistently use reasoning, research methods, effective strategies, and structures to analyze and criticize literary texts and linguistic and language features, identify and correct errors, and edit translated and interpreted texts.

d) Demonstrate analytical skills to describe, interpret, use, and compare and contrast features, sounds, texts, rules, theories, approaches, and mechanisms relevant to Arabic and English languages, linguistics, translation, cultures and civilizations, literature, and TESOL.

e) Communicate accurately and effectively in speech and writing and be able to comprehend and properly respond to utterances and statements in a wide spectrum of contexts.

f) Translate and interpret texts (of various registers: media, legal, financial, literary, etc.) from English to Arabic and vice versa, using the latest methods and advances in artificial intelligence.

g) Display a professional commitment to integrity, honesty, and ethical principles of their future professions and contribution to community development.

h) Demonstrate the ability to work collaboratively and individually to learn, create and use knowledge.

Admission Requirements

Acceptance to the English Language and Translation program is subject to the following conditions:

1. Applicants must have an IELTS score of at least 5.5.
2. Applicants may be required to take a placement exam to assess their proficiency in English. This exam may test the applicant's skills in listening, reading, writing, and speaking.

In cases whereby the applicant doesnot meet the eligibility requirements, provisional acceptance might be granted provided that a cumulative average of 75% is attained in both ENGL100 and ENGL 101.

Career Opurtunities

Upon graduation, graduates are equipped to.

1. Pursue professional careers in different settings that require translations, including banks, hospitals, government agencies, corporations, and law firms.
2. Work as interpreters in various fields that require bilateral and community interpreting.
3. Meet the demands of the advertising sector by localizing content effectively.
4. Work in editing and publishing jobs that require strong writing and communication skills.
5. Work in careers related to media and journalism.

Degree Requirements

In order to graduate with a bachelor's degree in English Language and Translation, students must successfully complete 133 credit hours of coursework. The distribution of the required courses and credit hours of this program is as follows:

- University Requirements 37 Credits
- College Requirements 21 Credits
- English Language and Translation Requirements 75 Credits

Total **133 Credits**

University Requirements

University Requirements consist of 37 credit hours distributed as follows:

A) The compulsory courses - 34 credit hours:

Course Code	Course Title	Credits	Pre-Requisites
ARAB 101	Basic Academic Arabic	3	
ARAB 201	Advanced Academic Arabic	3	ARAB 101
ENGL 100	General English	3	
ENGL 101	Basic Academic English I	3	ENG 100
ENGL 102	Basic Academic English II	3	ENGL 101
ENGL 203	Advanced Academic English I	3	ENGL 102
ENGL 206	Technical Writing	3	ENGL 203
IT 100	Information Technology	3	
MATH 100	Mathematics I	3	
STAT 100	Introduction to Probability and Statistics	3	MATH 100
PHE 101	Health and Physical Education	1	
SOCS 101	Islamic Civilization I	3	

B) Free Elective Course - 3 credit hours to be chosen from the following list:

Course Code	Course Title	Credits	Pre-Requisite(s)
FREN 101	Basic French I	3	
CIT 101	Future Technologies	3	
ASTR 150	Introduction to Astronomy	3	
CHEM 150	Chemistry & Society	3	
SOCS 201	Islamic Civilization II	3	SOCS 101
SOCS 202	World Civilization	3	
SOCS 203	History of the Kingdom of Saudi Arabia	3	

College Requirements

College Requirements consist of 21 credit hours distributed as follows:

Course Code	Course Title	Credits	Pre-Requisites
CSC 100	Introduction to Computing	3	IT 100
ENGL 107	Study & Research Skills	3	
ENGL 204	Advanced Academic English II	3	ENGL 203
ENGL 241	Communication Skills in English	2	
HUM 343	Career Preparation	1	Passing 80 CHs
LAW 101	Principles of Law	3	
PSYC 101	Psychology and Mental Health	3	
SOCS 210	Human Rights in Islam	3	

Program Specialization Requirements

Program specialization requirements consist of 75 credit hours: 66 compulsory credit hours and 9 elective credit hours distributed as follows.

A) Compulsory Specialization Requirements

Course Code	Course Title	Credits	Pre-Requisite(s)
ENGL 103	English Grammar & Usage	3	
ENGL 105	Listening Comprehension	3	
ENGL 108	Reading Comprehension	3	
ENGL 112	Introduction to Literature	3	
ENGL 122	Introduction to Linguistics	3	
ENGL 213	Literary Appreciation	2	ENGL 112
ENGL 221	Phonetics & Phonology	3	ENGL 122
ENGL 224	Morphology & Syntax	3	ENGL 122
ENGL 231	Introduction to Translation	3	
ENGL 316	British and American Novel	3	ENGL 112
ENGL 321	Semantics & Pragmatics	3	ENGL 122
ENGL 328	Advanced English Syntax	2	ENGL 224
ENGL 333	Introduction to Conference Interpreting	3	ENGL 231
ENGL 336	Consecutive & Simultaneous Interpreting	3	ENGL 333
ENGL 338	Advanced Writing Skills	3	ENGL 203
ENGL 345	Legal and Business Translation	3	ENGL 231
ENGL 346	Sociolinguistics	3	ENGL 122
ENGL 347	Research Paper	3	ENGL 338
ENGL 418	Literary Criticism	2	ENGL 316
ENGL 433	Audiovisual and Media Translation	3	ENGL 231
ENGL 436	Computer Applications in Translation	3	ENGL 231
ENGL 467	Field Experience	3	Cmpletion of 110 credits
TESOL 211	Introduction to TESOL	3	

B) Elective Specialization Requirements: 9 credit hours to be chosen from the following list.

Course Code	Course Title	Credits	Pre-Requisite(s)
ENGL 123	Pronunciation & Speech	3	
ENGL 215	Short Story	3	ENGL 112
ENGL 232	Theoretical and Practical Issues in Translation	3	ENGL 231
ENGL 234	Translation of General Texts from English into Arabic and Vice Versa	3	ENGL 231

Course Code	Course Title	Credits	Pre-Requisite(s)
ENGL 245	Vocabulary Building	3	
ENGL 313	Lexicology and Lexicography	3	ENGL 224
ENGL 315	History of the English Language	3	ENGL 221
ENGL 326	The English Verb	3	ENGL 103
ENGL 334	Technical and Scientific Translation	3	ENGL 231
ENGL 411	Shakespeare	3	ENGL 112
ENGL 425	English for Specific Purposes	3	ENGL 122
ENGL 426	Error Analysis	3	ENGL 328
ENGL 434	Advanced Consecutive & Simultaneous Interpreting	3	ENGL 336
ENGL 437	Special Topics in Translation	3	ENGL 231
ENGL 438	Computer-Aided Translation CAT	3	ENGL 231
ENGL 439	Translation Ethics	3	ENGL 231
TESOL 212	Methods and Materials to Teach EFL/ESL	3	
TESOL 213	Principles and Priorities in Language Teaching	3	TESOL 211

Study Plan (133 Credits)

Year I

First Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
ARAB 101	Basic Academic Arabic	3	
ENGL 100	General English	3	
IT 100	Information Technology	3	
Math 100	Mathematics	3	
SOCS 101	Islamic Civilization	3	
PHE 101	Health and Physical Education	1	
	Total Credits	**16**	

Second Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ARAB 201	Advanced Academic Arabic	3	ARAB 101
ENGL 101	Basic Academic English I	3	ENGL 100
ENGL 103	English Grammar & Usage	3	
ENGL 105	Listening Comprehension	3	
ENGL 108	Reading Comprehension	3	
STAT 100	Introduction to Probability & Statistics	3	MATH 100
	Total Credits	**18**	

Year II

Third Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
CSC 100	Introduction to Computing	3	
ENGL 102	Basic Academic English II	3	ENGL 101
ENGL 107	Study and Research Skills	3	
ENGL 112	Introduction to Literature	3	
ENGL 122	Introduction to Linguistics	3	
ENGL 241	Communication Skills in English	2	
	Total Credits	**17**	

Fourth Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 203	Advanced Academic English I	3	ENGL 102
ENGL 213	Literary Appreciation	2	ENGL 112
ENGL 221	Phonetics & Phonology	3	ENGL 122
ENGL 231	Introduction to Translation	3	
PSYC 101	Psychology and Mental Health	3	
	Specialization Elective	3	
	Total Credits	**17**	

Year III

Fifth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 204	Advanced Academic English II	3	ENGL 203
ENGL 224	English Morphology & Syntax	3	ENGL 122
ENGL 321	Semantics & Pragmatics	3	ENGL 221
ENGL 333	Introduction to Conference Interpreting	3	ENGL 231
LAW 101	Principles of Law	3	
	Free Elective	3	
	Total Credits	**18**	

Sixth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 206	Technical Writing	3	
ENGL 328	Advanced English Syntax	2	ENGL 224
ENGL 336	Consecutive & Simultaneous Interpreting	3	ENGL 333
ENGL 338	Advanced Writing Skills	3	ENGL 203
ENGL 346	Sociolinguistics	3	ENGL 122
HUM 343	Career Preparation	1	Passing 80 CHs
	Specialization Elective	3	
	Total Credits	**18**	

Year IV

Seventh Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 345	Legal and Business Translation	3	ENGL 231
ENGL 347	Research Paper	3	ENGL 338
ENGL 316	British and American Novel	3	ENGL 112
SOCS 210	Human Rights in Islam	3	
TESOL 211	Introduction to TESOL	3	
	Specialization Elective	3	
	Total Credits	**18**	

Eight Semester (11 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 418	Literary Criticism	2	ENGL 316
ENGL 433	Audiovisual and Media Translation	3	ENGL 231
ENGL 436	Computer Applications in Translation	3	ENGL 231
ENGL 467	Field Experience	3	Completion of 110 credits
	Total Credits	**11**	

Total Program Credits	**133**	

Course Descriptions

ENGL 100 General English 3(3, 0, 0)

This aims to enhance and promote students' oral and written English language proficiency. The course primarily seeks to improve students' four language skills to enable them to communicate in different contexts. Students will also receive input on vocabulary and the use of English in a wide range of situations. The course offers a wide variety of conversations and written texts, vocabulary, and advanced syntactic structures such perfect tenses, passive voice and the use of transitional words to organize both speaking and writing practice.

ENGL 101 Basic Academic English I 3(3, 0, 0)

This course aims to equip students with the essential writing skills they need at sentence and paragraph levels. The course emphasizes fluency in the writing process through use of invention strategies, drafting, revising, and editing in order to produce well-organized, coherent, and unified paragraphs. It also reviews some of the basics of English grammar and provides training in reading comprehension and oral expression.

ENGL 102 Basic Academic English II 3(3, 0, 0)

Prerequisite: ENGL 101

This course aims to improve students' composition skills and enable them to identify and produce paragraphs of diverse styles. Students will also be trained in writing short expository essays of various types, including narrative, descriptive, cause and effect, and comparative essays. Furthermore, students will have the opportunity to improve oral expression through debates and discussions.

ENGL 103 English Grammar and Usage 3(3, 0, 0)

This course aims to enhance students' understanding and ability to use English grammar in a communicative context. The course reviews and expands on many aspects of grammar, including verb tenses, subject-verb agreement, prepositions, and modals. Students will develop their communicative competence by practicing these different grammatical aspects using a variety of in- class communicative and functional activities. In addition, this course introduces students to the basic syntactic categories (NP, VP, AdjP, PP, etc.) and functions (subject, direct object, indirect object, subject complement, etc.). Sentence types (simple, compound, complex, and compound complex) will be tackled, as well.

ENGL 105 Listening Comprehension 3(0, 0, 3)

This course aims to develop students' ability to understand real-life spoken English via a systematic and guided training in listening comprehension. The course offers a variety of topics and activities with audio recordings of natural and spontaneous conversations to enable students to understand and respond to different real life situations effectively.

ENGL 107 Study & Research Skills 3(2, 0, 1)

This course aims to develop students' ability to practice many academic skills necessary for success in a variety of educational settings, including dictionary use, note-taking, library use, and test preparation. Though each unit has a theoretical introduction, real emphasis is to be placed on applications, practical skills, and projects.

ENGL 108 Reading Comprehension 3(3, 0, 0)

This course aims to develop students' ability to read and comprehend English texts using the basic skills of reading comprehension such as summarizing, outlining, finding pronoun reference, making inferences, and using context clues to understand word meanings. The course also provides training in the techniques of vocabulary building as well as practicing on identifying the main ideas at paragraph and discourse levels.

ENGL 112 Introduction to Literature 3(3, 0, 0)

This course aims to provide students with the requisite skills for reading, comprehending, and appreciating literature. It focuses on the study of fiction, poetry, and drama to understand and appreciate literary texts through examination of specific texts by major authors representing different cultural and historical periods. Students are expected to develop academic writing competencies using analytical and critical skills in response to literary texts. This course also offers an overview of the literary periods and genres and helps students develop an understanding of different approaches to the study of literature.

ENGL 122 Introduction to Linguistics 3(3, 0, 0)

This course aims to acquaint students with the nature of human language and its characteristics and functions. It also introduces students to the major subfields of linguistics (phonetics, phonology, morphology, syntax, semantics, and pragmatics) with reference to contemporary English. Special emphasis will be placed on the examination of sounds and sound patterns (phonetics and phonology), how words are constructed from smaller parts (morphology), and how words are combined to form sentences (syntax).

ENGL 123 Pronunciation & Speech 3(1, 0, 2)

This course aims to help students improve their listening comprehension skill, correct their pronunciation, and reduce foreignness in their speech. This is to be achieved by intensive practice in the pronunciation of individual sounds, sound clusters, and suprasegmentals. The course also acquaints students with conversation and public speech skills.

ENGL 203 Advanced Academic English I 3(3, 0, 0)

Prerequisite: ENGL 102

This course aims to improve students' effective communication and reasoning skills essential for proper comprehension and critical reading of academic texts. Students are expected to develop other useful skills such as note-taking, summarizing and outlining as well as writing expository and argumentative essays.

ENGL 204 Advanced Academic English II 3(3, 0, 0)

Prerequisite: ENGL 203

This course aims to enhance students' language skills that have already been acquired in previous courses and put them to use to improve their ability to write a research paper on a relevant topic. These skills include essentially comprehension, critical reading of texts, and writing expository and argumentative essays. Emphasis will be placed on proper researching, note taking, and documentation. Oral presentation skills and proficiency in presenting arguments will be tested and refined when students present their papers in class.

ENGL 206 Technical Writing 3(3, 0, 0)

Prerequisite: ENGL 203

This course aims to help students improve their writing skills in the technical field to be able to identify the target audience and style, select appropriate document formats, and use visuals and graphics efficiently. The course also seeks to expose students to practices about communication in various workplace environments and technical/managerial communities. It covers practical techniques for planning, writing, and editing technical documents such as reports, proposals, resumes, professional correspondence, and instructions.

ENGL 213 Literary Appreciation 3(3, 0, 0)

Prerequisite: ENGL 112

This course aims to improve students' literary appreciation skills and enhance their knowledge of English literature and culture through reading a selection of short stories, poems and one-act plays. The course also presents an overview of the most influential approaches to literary analysis and interpretation.

ENGL 215 Short Story 3(3, 0, 0)

Prerequisite: ENGL 112

This course aims to introduce students to the genre of short story through tracing its origins and development from 1840s to the present time. This is to be achieved by reading a representative sample of short stories, beginning with the pioneers of the genre, like Poe, Turgenev, Maupassant, and the modernists such as Joyce, Lawrence, Hemingway, Faulkner, and Beckett, among others.

ENGL 221 Phonetics & Phonology 3(2, 0, 1)

Prerequisite: ENGL 122

This course aims to acquaint students with the field of English phonetics and phonology. Topics include airstream mechanism, speech organs, places and manners of articulation, phonation and stricture types, consonants, vowels, and phonemic and phonetic transcription. Special emphasis will be placed on phonemes and allophones, syllabification rules, phonological processes, natural classes, and suprasegmentals.

ENGL 224 Morphology and Syntax 3(3, 0, 0)

Prerequisite: ENGL 122

This course aims to introduce students to morphological processes including word formation, grammatical categories, and syntactic relations. This course focuses on the principles by which parts of words are organized into larger units (inflectional morphology and word-formation), and by which words are organized into phrases and sentences (syntax). Synchronic and diachronic data from English and several other languages will be analyzed to illustrate how language is structured.

ENGL 231 Introduction to Translation 3(3, 0, 0)

This course aims to introduce students to the basic principles and methods of translation from English into Arabic and vice versa. Students will be introduced to various theories of translation and learn how to implement them in practice. The course will also assists students develop their translation skills by training them in translating texts of different genres. Aspects of text analysis, sentence structure, and importance of context in translation will be given the due attention.

ENGL 232 Theoretical and Practical Issues in Translation 3(3, 0, 0)

Prerequisite: ENGL 231

This course aims to introduce students to a comprehensive historical account of the translation theory and the most challenging practical issues in translation with innovative points of view to analyze the nature of such problems and develop possible solutions for them. Students will be trained on how to analyze texts and use the best strategies and tools in accordance with text type and form in actual communicative situations. Students as well will be acquainted with some translation difficulties of idiomatic expressions and cultural untranslatability.

ENGL 234 Translation of General Texts from English into Arabic and Vice Versa

3(3, 0, 0)

Prerequisite: ENGL 231

This course aims to train the student to translate general texts representing various fields from English into Arabic and vice versa. It also trains the student to choose the proper word (or expression) in order to convey the sense intended in a given context. Special emphasis is to be placed on the translation of idioms collocations and formulaic expressions.

ENGL 245 Vocabulary Building 3(3, 0, 0)

Prerequisite: ENGL 203

This course aims at broadening the students' vocabulary span. It offers enough vocabulary to enable them to communicate fluently in various situations. Students will also learn the correct usage of phrases, expressions, and collocations. In addition, students will learn to use various vocabulary-building strategies to improve vocabulary knowledge and active use of a large number of new words. The course helps students increase their storehouse of new words and expand their

knowledge of the structure of these words, including roots, affixes, and etymologies. Students will also gain knowledge of the meaning properties of the new words including polysemy, synonymy, denotation, and connotation. It also aids students to use word formation correctly to derive new words.

ENGL 313 Lexicology and Lexicography 3(3, 0, 0)

Prerequisite: ENGL 224

This course aims to familiarize the students with the developing fields of lexicology and lexicography. It covers topics such as lexical sets, lexical selection, lexical relations, and componential features of lexical items. The course offers systematic training in the use of monolingual and bilingual dictionaries. Problems of translating lexical relations and collocations will also be investigated in this course. Training will be in both Arabic and English.

ENGL 315 History of the English Language 3(3, 0, 0)

Prerequisite: ENGL 221

This course aims to survey the genesis and development of the English language from its earliest Indo-European origins to the present day. This survey includes an extensive examination of the major events in the historical development of the English language over the three major phases (Old, Middle and Modern English). The course also presents the linguistic changes which took place over centuries, including the phonetic, phonological, morphological, and syntactic changes. Changes in the orthographic system and lexicology will be tackled, as well.

ENGL 321 Semantics & Pragmatics 3(3, 0, 0)

Prerequisite: ENGL 122

This course aims to introduce students to some basic approaches to the study of meaning. The course provides a detailed exploration of the major current issues in semantics and pragmatics. Students are introduced to some core concepts used in the analysis of meaning and context-based interpretation: denotation, reference, quantification, propositional meaning (compositionality), presupposition, speech acts (il-locution, perlocution), implicature, and context vs. contextual domain. The main goal is to familiarize students with the basic topics in semantics and pragmatics and to help them develop fundamental knowledge in semantic and pragmatic analysis.

ENGL 326 The English Verb 3(3, 0, 0)

Prerequisite: ENGL 103

This course aims to provide students with a solid understanding of the semantic structure of the English verb. Special emphasis will be placed on categorizing English verbs and interpreting their internal semantic structures. The course will also examine the morphological and syntactic behavior of verbs in relation to their semantic properties.

ENGL 328 Advanced English Syntax 3(3, 0, 0)

Prerequisite: ENGL 224

This course aims to introduce students to the theory of constituent structure, units of syntactic analysis, syntax of arguments and predicates, and argument structure in natural languages. In addition, students will be introduced to the main schools of contemporary syntactic theorizing, including the “Government and Binding Theory”, and “Minimalism Program”.

ENGL 331 Literary Translation 3(3, 0, 0)

Prerequisite: ENGL 231

This course aims to acquaint students with the history and practice of literary translation. The course addresses the difficulties of literary language, theories of translation and translatability, theories of semantic equivalence, and alternative modes of translation, including sound- and graph-translation.

ENGL 333 Introduction to Conference Interpreting 3(2, 0, 1)

Prerequisite: ENGL 231

This course aims to acquaint students with basic skills used in conference interpreting. The course is carefully tailored to the needs of conference interpreters. It introduces students to strategies and techniques to perform 'Sight Translation' ("Source Language to Target Language" and "Target Language to Source Language") and bilateral consecutive and simultaneous interpretation. There will be a mixture of interactive lectures on Interpreting Theory, live sessions, and language laboratory practical sessions using the latest technology to enhance interpreting skills. This course covers a selection of topics in the areas of education, culture, politics, environmental health & protection, business and economy.

ENGL 334 Technical and Scientific Translation 3(3, 0, 0)

Prerequisite: ENGL 231

This course aims to familiarize students with the terminology and style of technical and scientific texts (engineering, medicine, pharmacy, etc.), and translate various technical and scientific texts from English into Arabic and vice versa. The course will focus on building conceptual knowledge of technical and scientific fields and the special features peculiar to them. The course also provides numerous case studies, highlights various translation challenges, and introduces a range of strategies for dealing with these fields.

ENGL 336 Consecutive & Simultaneous Interpretation 3(2, 0, 1)

Prerequisite: ENGL 233

This course aims to introduce students to in-house interpreting, escort interpreting and conference interpreting. It acquaints students with the main principles and techniques of two of the various forms and types of interpreting: consecutive and simultaneous interpreting. It will develop students' interpreting skills needed to process a continuous message from the source language to the target language. Additional strategies for providing peer feedback are developed and refined. Lab hours will provide intense experiential opportunities to practice and hone skills introduced in class.

ENGL 338 Advanced Writing Skills 3(2, 0, 1)

Prerequisite: ENGL 203

This course aims at providing the student with the knowledge, skills, and strategies necessary for developing their ability to succeed in the academic and professional arena. The course focuses on the development of written and oral communication skills, and creative and critical thinking. This course is also intended to acquaint the students with the basic background information of the skill of writing different types of paragraphs as a preliminary step toward writing short essays, reports, business letters, and note-taking.

ENGL 346 Sociolinguistics 3(3, 0, 0)

Prerequisite: ENGL 122

This course aims to familiarize students with the fundamental theories, approaches, concepts, terms, and methodologies of Sociolinguistics. Furthermore, students will explore sociolinguistic issues such as language and gender, language and culture, language and politics, ethnicity, power and ideology, discourse practices/orders, and specific aspects of conversational analysis. Additionally, the course investigates the impact of technology on sociolinguistics, analyzing how digital communication platforms and tools have shaped language use and evolution within diverse sociocultural environments.

ENGL 411 Shakespeare 3(3, 0, 0)

Prerequisite: ENGL 112

This course introduces students to William Shakespeare as a poet and as a playwright. The aim of the course is to familiarize students with the historical context and characteristics of the drama in Shakespeare's times. It also narrows its scope on reading selective material from the vast

Shakespeare's output and on seeing a performance of a play either recorded, or a live one. Additionally, the course identifies the ways in which reading and analyzing plays and theatrical performances can contribute to the students' perception of social, gender, or economic problems and their understanding of how these issues are presented in the text and performed to the audiences.

ENGL 416 British and American Novel 3(3, 0, 0)

Prerequisite: ENGL 112

This course introduces students to the English novel as a literary genre exploring various elements such as narrative techniques, plot, setting, characterization, theme, etc. Through an in-depth study of selected novels, students will be acquainted with the various styles and trends within this genre with reference to its historical, cultural, and thematic contexts.

ENGL 420 Research Methodology 3(3, 0, 0)

Prerequisite: ENGL 204

This course aims to provide students with an opportunity to advance their understanding of research through practical exploration of research techniques, approaches, and ethics. The course is designed as a guide to write a formal term paper on a linguistic or literary topic. In addition to the format and stylistic issues, students will be trained on selecting and shaping topics, searching for relevant literature, data collection and analysis, and documentation.

ENGL 425 English for Specific Purposes 3(3, 0, 0)

Topics vary according to student and faculty interests.

ENGL 426 Error Analysis 3(3, 0, 0)

Prerequisite: ENGL 328

This course aims to introduce students to the theories and approaches that dominated the scene of second language acquisition research during the second half of the past century. The major component of the course is devoted to explore the tenets and views representing the "Error Analysis Approach". The goals of this course are achieved through reading a selection of original articles that tackle this subject. Emphasis will be placed on the performance errors of Arab students of English. Students are trained on how to identify, label and account for errors according to the major taxonomies representing all possible sources and types of errors.

ENGL 431 Legal & Business Translation 3(3, 0, 0)

Prerequisite: ENGL 231

This course aims to acquaint students with the translation of legal and business documents and texts, including contracts, agreements, law and constitutional articles, banking and finance, stock markets, and privatization. The course also introduces students to professional standards of legal and business translation practice using authentic materials and contextually meaningful situations.

ENGL 433 Media and Political Translation 3(2, 0, 1)

Prerequisite: ENGL 231

This course aims to acquaint students with media and political discourse styles, formats, and features. This is to be achieved by translating a wide range of political and mass-media texts, including press reports, interviews, political speeches, news bulletins, and public speeches. This course also aims to familiarize students with the socio-cultural, linguistic, and technical dimensions that characterize the translation of media and political discourses, including understatement, hedging, and indirectness.

ENGL 434 Advanced Consecutive & Simultaneous Interpretation II 3(1, 0, 2)

Prerequisite: ENGL 336

This course aims to introduce students to in-house interpreting, escort interpreting and conference interpreting. Students are familiarized with advanced strategies and techniques in both consecutive and simultaneous modes of interpreting. Intensive training in sight translation, note-taking and

memory retention seek to promote students' listening comprehension and facilitate consecutive interpreting. In simultaneous interpreting sessions, students learn the multitasking nature of the profession and the concept of processing capacity. Practical coping tactics including segmentation, conversion, amplification/omission, correction and induction are also put into practice in interpreting authentic speeches.

ENGL 435 Audiovisual Translation 3(3, 0, 0)

Prerequisite: ENGL 231

This course aims to introduce students to audiovisual media translation and to familiarize them with the socio-cultural, linguistic and technical dimensions that characterize this type of translation. Additionally, this course offers new insights, practice and research relevant to this promising industry. It also provides students with a broad introduction to the subject, ranging from dubbing and voice-over to surtitling and subtitling, while offering a practical focus on professionally oriented training in interlingual subtitling. It places significant emphasis on accessibility to the media and offers grounding in translation theory and research methods.

ENGL 436 Computer Applications in Translation 3(0, 0, 3)

Prerequisite: ENGL 231

This course aims to enrich students' awareness of the importance of the computer and its various applications in the translation process. The course introduces students to various uses of computers in the process of translation such as electronic dictionaries and thesauri, terminology databases, machine translation, and computer-aided translation. Other uses such as word processing and automatic dictation software will be discussed, as well.

ENGL 437 Special Topics in Linguistics or Translation 3(3, 0, 0)

Prerequisite: ENGL 231

This course provides students with a chance to explore a relevant topic on linguistics or translation. Topics vary based on faculty expertise and student interest.

ENGL 438 Computer-Aided Translation 3(0, 0, 3)

Prerequisite: ENGL 231

This course aims to introduce students to a variety of computer software programs used in the translation process, including translation memories (SDL Trados Workbench), and machine translation tools. During this course, students will be introduced to the major steps of the translation process and the tools available on the market to help in each step. The course consists of two main components: Translation Memories and Machine Translation. Students should be aware of the limitations of machine translation (polysemy, pragmatic meaning, etc.) and trained to rule out the erroneous outcomes.

ENGL 439 Translation Ethics 3(3, 0, 0)

Prerequisite: ENGL 231

This course aims to introduce students to the basic notions and terminology regarding social and professional ethics with a special emphasis on translation, including ethics for sworn or certified translators. In addition to trust, integrity, honesty, accuracy, meticulousness, impartiality, and justified refusal to accept a commission, this course focuses on professional confidentiality and discretion. This course also highlights the obligatory use of all available aids such as dictionaries, encyclopedias, textbooks and other sources of knowledge; and consulting an expert in order to ensure the highest possible quality of translation.

ENGL 467 Field Experience 3(3, 0, 0)

Prerequisite: Upon the completion of 110 credits

This course offers students the invaluable opportunity to apply their English language and translation skills in real-world contexts through fieldwork experiences. Engaging in various fieldwork settings, students will gain practical experience, improve their linguistic proficiency, and develop essential translation techniques. Emphasizing experiential learning, the course equips

students with the necessary tools to navigate linguistic challenges, adapt their communication strategies, and foster cross-cultural understanding.

TESOL 211 Introduction to TESOL 3(3, 0, 0)

This course aims to introduce students to the educational contexts in which English is taught and learned and the primary methods and materials that are used to teach English as a foreign language. In addition, students will be introduced to the links between what teachers and learners do in class and what applied linguistic research tells us about how foreign languages are learned. These are to be achieved via a program of lectures, readings, discussions, and practical teaching exercises.

TESOL 212 Methods & Materials to Teach EFL/ESL 3(3, 0, 0)

This course aims to survey the methods and materials used for teaching English as a second or foreign language. The course covers several topics, including TESOL settings and contexts; teaching the four skill areas of listening, speaking, reading and writing; classroom management and activities; technology and language teaching; and TESOL resources and support.

TESOL 213 Principles and Priorities in Language Teaching 3(3, 0, 0)

Prerequisite: TESOL 211

This course aims to introduce students to general principles that will orient language teaching towards proficiency goals. The course focuses on how to provide instruction that is meaningful, interactive, and responsive to learners' needs. It also provides an overview of the principles and priorities that have changed in response to paradigm shifts in "Linguistics and Learning Theory".

BACHELOR'S DEGREE IN LAW

Program's Mission

The program is committed to provide high-quality education in law and related disciplines by equipping students with the knowledge, skills, and ethical values needed for success in their career field. The program is also dedicated to contributing to the advancement of students and stakeholders' understanding of law principles, fostering research opportunities and serving the local public good by providing them with the legal services and training they need.

Intended Learning Outcomes

Upon completion of the program, students are expected to be able to:

- Demonstrate a thorough knowledge and understanding of key elements and concepts of the local, Islamic, and international laws.
- Recognize the basic principles and concepts of the procedural justice.
- Identify the relevant social, economic, political, historical, philosophical, ethical and cultural contexts within which the law operates.
- Recognize the research skills necessary to permit students to locate, read and critically assess the work of others and to conduct research projects of their own.
- Demonstrate a thorough knowledge of the principles, values and ethics that the legal profession should have.
- Apply acquired knowledge to solving hypothetical and actual problems.
- Distinguish relevance and irrelevance in relation to evidence from other disciplines and their application to the legal framework.
- Assess the relative weight of competing arguments and information.
- Develop a capacity to analyze legal documents.
- Show commitment to personal development and the ability to act independently in planning, researching, and executing legal projects.
- Present an argument or information in a clear and logical way and respond to counterarguments at an advanced level.
- Be able to use modern technologies to develop legal knowledge and skills.
- Work independently and in teams.
- Display a professional commitment to ethical practice.

Degree Requirements

In order to graduate with a bachelor's degree in Law, a student must successfully complete 142 credit hours of coursework. The distribution of the required courses and credit hours of this program is as follows:

- University Requirements 37 Credits
- College Requirements 21 Credits
- Program Requirements 84 Credits

Total **142 Credits**

A) The compulsory courses - 37 credit hours:

Course	Title	Credits	Prerequisite
ARAB 101	Basic Academic Arabic	3	
ARAB 201	Advanced Academic Arabic	3	ARAB 101
ENGL 100	General English	3	
ENGL 101	Basic Academic English I	3	ENG 100
ENGL 102	Basic Academic English II	3	ENGL 101
ENGL 206	Technical Writing	3	ENGL 203
ENGL 203	Advanced Academic English I	3	ENGL 102
IT 100	Information Technology	3	
MATH 100	Mathematics	3	
STAT 100	Introduction to Probability & Statistics	3	MATH 100
PHE 101	Health and Physical Education	1	
SOCS 101	Islamic Civilization I	3	
	University Free Elective Course*1	3	
Total Credit Hours		**37**	

B) Free Elective Course - 3 credit hours to be chosen from the following list:

Course	Title	Credits	Prerequisite
ASTR 150	Introduction to Astronomy	3	
CHEM 150	Chemistry & Society	3	
CIT 101	Future Technologies	3	
FREN 101	Basic French I	3	
SOCS 201	Islamic Civilizations II	3	SOCS 101
SOCS 202	World Civilizations	3	
SOCS 203	History of the Kingdom of Saudi Arabia	3	

College Requirements

College Requirements consist of 21 credit hours distributed as follows:

Course	Title	Credits	Prerequisite
CSC 100	Introduction to Computing	3	IT 100
HUM 107	Study & Research Skills	3	---
ENGL 204	Advanced Academic English II	3	ENGL 203
ENGL 241	Communication Skills in English	2	ENGL 102
HUM 343	Career Preparation	1	Passing 80 CHs
LAW 101	Principles of Law	3	
PSYC 101	Psychology and Mental Health	3	
SOCS 210	Human Rights in Islam	3	
Total Credit Hours		**21**	

Program Specialization Requirements

Program specialization requirements consist of 84 credit hours: 78 compulsory credit hours and 6 elective credit hours distributed as follows:

A) Compulsory Specialization Requirements

Course	Title	Credits	Prerequisite
LAW 111	Introduction to Islamic Jurisprudence	3	
LAW 113	Personal Status Law	3	LAW 101
LAW 116	Administrative Law	3	LAW 101
LAW 118	Sources of Obligations	3	LAW 101
LAW 121	Constitutional Law	3	LAW 101
LAW 112	English Legal Terminology	3	LAW 10
LAW 125	International Public Law	3	LAW 101
LAW 202	Commercial Law	3	LAW 101
LAW 212	Civil Contracts	3	LAW 118
LAW 218	Provisions of Real and Personal Guarantee	3	LAW 101
LAW 223	Administrative Contracts	3	LAW 116
LAW 225	Methods of Proof and Execution	3	LAW 118
LAW 228	International Organizations	3	LAW 125
LAW 229	Labor and Social Security Law	3	LAW 118
LAW 311	General Penal Code	3	LAW 123
LAW 316	Zakat and Taxation System	3	LAW 111
LAW 319	Commercial Contracts & Banking Transactions	3	LAW 202
LAW 321	Bankruptcy and Company Law	3	LAW 202
LAW 322	International Private Law	3	LAW 125
LAW 335	Administrative Disputes	3	LAW 223
LAW 411	Special Penal Code	3	LAW 311
LAW 414	Penal Procedures Law	3	LAW 311
LAW 415	Insurance Provisions	3	LAW 101
LAW 416	Islamic Procedural Law	3	LAW 101
LAW 428	Judicial System and Pleadings	3	LAW 101
LAW 434	Graduation Project and Field Training	3	Passing 100 Credts Hrs.
Total Credit Hours		**78**	

B) Elective Specialization Requirements: 6 credit hours to be chosen from the following list.

Course	Title	Credits	Prerequisite
LAW 123	Criminology and Penology	3	LAW 101
LAW 210	Shariah Objectives	3	LAW 101
LAW 211	Litigation Procedures	3	LAW 101
LAW 315	Human Rights	3	LAW 101
LAW 330	Cybercrime Law	3	LAW 101
LAW 332	Maritime and Aviation Law	3	LAW 202
LAW 336	Banking Law and Islamic Banking	3	LAW 101
LAW 432	Special Topics in Law	3	LAW 101
LAW 319	Commercial Contracts & Banking Transactions	3	LAW 202

Study Plan (142 Credits)

Year I

First Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
IT 100	Information Technology	3	
SOCS 101	Islamic Civilization I	3	
ENGL 100	General English	3	
PHE 101	Health and Physical Education	3	
ARAB 101	Basic Academic Arabic	3	
Math 100	Mathematics	1	
	Total Credits	**16**	

Second Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ARAB 201	Advanced Academic Arabic	3	ARAB 101
CSC 100	Introduction to Computing	3	
ENGL 101	Basic Academic English I	3	ENGL 100
LAW 101	Principles of Law	3	
LAW 111	Introduction to Islamic Jurisprudence	3	
STAT 100	Introduction to Probability & Statistics	3	MATH 100
	Total Credits	**18**	

Year II

Third Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
LAW 121	Constitutional Law	3	LAW 101
LAW 113	Personal Status Law	3	LAW 101
ENGL 102	Basic Academic English II	3	ENGL 101
PSYC 101	Psychology & Mental Health	3	
LAW 125	International Public Law	3	LAW 101
LAW 116	Administrative Law	3	LAW 101
	Total Credits	**18**	

Fourth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 203	Advanced Academic English I	3	ENGL 102
LAW 112	English Legal Terminology	3	LAW 101
LAW 118	Sources of Obligations	3	LAW 101
LAW 202	Commercial Law	3	LAW 101
LAW 212	Civil Contracts	3	LAW 101
SOCS 210	Human Rights in Islam	3	
	Total Credits	**18**	

Year III

Fifth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 204	Advanced Academic English II	3	ENGL 203
HUM 107	Study and Research Skills	3	
LAW 218	Provisions of Real and Personal Guarantee	3	LAW 101
LAW 225	Methods of Proof and Execution	3	LAW 118
LAW 228	International Orgaizations	3	LAW 125
	Specialization Elective/Free Course	3	
	Total Credits	**18**	

Sixth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
LAW 229	Labor and Social Security Law	3	LAW 118
LAW 223	Administrative Contracts	3	LAW 116
HUM 343	Career Preparation	1	Passing 80 Credit Hrs.
ENGL 241	Communication Skills in English	2	ENGL 102
LAW 311	General Penal Code	3	LAW 123
LAW 316	Zakat and Taxation System	3	LAW 202
LAW 321	Bankruptcy and Company Law	3	LAW 202
	Total Credits	**18**	

Year IV

Seventh Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 206	Technical Writing	3	LAW 111
LAW 322	International Private Law	3	LAW 122
LAW 335	Administrative Disputes	3	LAW 223
LAW 411	Special Penal Code	3	LAW 311
LAW 416	Islamic Procedural Law	3	ENGL 203
	Specialization Elective/Free Course	3	
	Total Credits	**18**	

Eight Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
LAW 319	Commercial Contracts and Banking Transactions	3	LAW 202
LAW 414	Penal Procedures Law	3	LAW 311
LAW 415	Insurance Provisions	3	LAW 101
LAW 428	Judicial System and Pleadings	3	LAW 101
LAW 434	Graduation Project and Field Training	3	Passing 100 Credit Hrs
	University Elective/Free Course	3	
	Total Credits	**18**	

Course Descriptions

LAW 101 Principles of Law 3(3, 0, 0)*

This course aims to introduce students to the general theory and basics of law in terms of its definition, origins, characteristics, bases, branches, sources, interpretation, and sphere of application. It also acquaints students with the general theory of right concerning its definition, types, persons, objects, sources, uses, and the means of its protection.

LAW 111 Introduction to Islamic Jurisprudence (Fiqh) 3(3, 0, 0)

The course introduces students to the Islamic jurisprudence bases, history, subject matter, goals and definition. The course also tackles the Shari'ah legislative goals. In addition, the course covers the different sources of Shari'ah such as the Holy Quran, the Sunna, Ijmaa (unanimity of savants), ijtihaad (impendent judgment), qiyaas (analogy), free benefits, custom and the Sahabi fatwa.

LAW 112 English Legal Terminology 3(3, 0, 0)

The purpose of this course is to acquaint the student with English legal terminology through studying some legal topics in English. By so doing, the students will be exposed to the basic legal terminology, phrases and expressions, which, in turn, enable them to understand English legal texts and express their legal thoughts in the target language.

LAW 113 Personal Status Law 3(3, 0, 0)

This course with all that relates to the organization of the family in Islam based on the stipulations of the Saudi personal status law beginning with the engagement, until the marriage contract, with all that it entails in terms of rights and obligations for the married couple. The conditions for the validity of the nuptial contract and its applicability, the rights of the children insofar as the establishment of affiliation to the family, nursing, rearing, and the dissolution of the marriage contract and the wisdom of it, while mentioning the ways to end the marriage.

LAW 116 Administrative Law 3(3, 0, 0)

Prerequisite: LAW 101

The course covers the administrative institutions of the state: local, regional and national. To ensure great familiarity with administrative law, the course discusses three topics in detail; (1) administrative decision, (2) civil service and (3) public funds in Saudi Arabia.

LAW 118 Sources of Obligations I 3(3, 0, 0)

Prerequisite: LAW 101

This course aims at introducing students to the natural and civil obligations. To this end, the course acquaints students with the definition of obligation, rights on personal and rights in rem, the voluntary and involuntary sources of obligations. (Contract, individual action, harmful act, useful acts and law).

LAW 121 Constitutional Law 3(3, 0, 0)

The course aims to introduce students to Constitution, the basic legislation of any legal system. To this end, the course sheds light on the meaning of the "Constitution" and its legal importance; explains the methods of its preparation and issuance; and illustrates the nature of the rules it contains, their legal value, and the methods of abolishing and amending them. The course also explains the types of constitutions and methods of monitoring the constitutionality of laws. Moreover, the course outlines the specificity of constitutional rules in the Kingdom and their coverage of both legal and illegal aspects. It also presents the constitutional regulations in force in the Kingdom, most notably the basic law of governance, the Allegiance Council system, the Cabinet system, the Shura Council system and the regions system.

LAW 123 **Criminology and Penology 3(3, 0, 0)**

This course focuses on the study of criminology and penology. The first section deals with the definition of criminal science, history and relation to the penal code, individual and social factors

of criminal behavior, and the different theories that were developed on this subject. The second section deals with the science and development of the science of punishment, along with the penal schools, penalties for freedom, bases of punitive treatment, penal institutions, and precautionary measures. The course also explores the methods used to treat delinquents for the purpose of rehabilitation, such as release of a policeman, suspension of execution, and subsequent care for the released people.

LAW 125 International Public Law 3(3, 0, 0)

Prerequisite: LAW 101

This course focuses on the meaning, scope and nature of criminology and penology. The first section deals with the definition of criminal science, history and relation to the penal code, individual and social factors of criminal behavior, and the different theories that were developed on this subject. The second section deals with the science and development of the science of punishment, along with the penal schools, penalties for freedom, bases of punitive treatment, penal institutions, and precautionary measures. The course also explores the methods used to treat delinquents for the purpose of rehabilitation, such as release of a policeman, suspension of execution, and subsequent care for the released persons.

LAW 202 Commercial Law 3(3, 0, 0)

Prerequisite: LAW 101

This course is concerned with the general principles of commercial law; it covers its origin, development, commercial acts, and the merchant in terms of the required conditions and commercial capacity, the store, its elements and protection, commercial books, commercial registry, and commercial contracts.

LAW 210 Shariah Objectives (maqasid) 3(3, 0, 0)

The course deals with the definition and study of the Shariah purposes. It also seeks to build the skill of inferring legal provisions for emerging issues by recognizing the secrets and wisdoms of the Sharia rulings.

LAW 211 Litigation Procedures 3(3, 0, 0)

Prerequisite: LAW 101

This course aims at introducing students to the judicial system in the Kingdom of Saudi Arabia, lawsuits and the procedures for filing them, the litigation procedures, the judicial rulings and the ways of appealing them.

LAW 212 Civil Contracts 3(3, 0, 0)

Prerequisite: LAW 118

This course aims to introduce students to the most popular contracts such as sale and lease contracts. The course will concentrate on the definition, characteristics, elements, legal effects and termination of such contracts. Some considerations will also be given to the law of Landlords and Tenants.

LAW 218 Provisions of Real and Personal Guarantee 3(3, 0, 0)

Prerequisite: LAW 101

This course will explore real property as security for the repayment of borrowed funds and other obligations. The course focuses on the obligation contract between debtor and creditor; the security agreement (mortgage, deed of trust, equitable and other mortgage substitutes) and the rights and remedies of the party in the event of failure to perform under the law in general and Saudi legal system in specific. It also discusses the topic of debt guaranty (general guaranty and private guaranty).

LAW 223 Administrative Contracts 3(3, 0, 0)

Prerequisite: LAW 116

This course aims to introduce students to the definition, basic rules, characteristics, types and examples of administrative contracts. It also illustrates the legal effects of these contracts upon their parties and others. Special concentration will be devoted to the Financial Balance of the Contract, Exceptional Circumstances Theory, the effect of the Act of Prince and the state of necessity.

LAW 225 Methods of Proof and Execution 3(3, 0, 0)

Prerequisite: LAW 118

This course deals with different methods of proof, both formal and substantive rules of evidence; writing, testimony, oath, declaration, presumptions, expertise and inspection. It also deals with the law of enforcement in terms of the enforcement department, competent officers, procedures, instruments, and the means of obligatory enforcement against debtor's property and in person".

LAW 228 International Orgainzations 3(3, 0, 0)

This course aims to provide students with the concepts of public international law and theories of international organizations. The course also explores the sources of public international law, the utilization of international legal principles, and the overall notion of international institutions. Topics covered in the course include international custom, the legal basis of international practices, the relationship between public international law and internal law, the international responsibility.

LAW 229 Labor and Social Security Law 3(3, 0, 0)

Prerequisite: LAW 118

The course introduces students to the Labor and Social Security laws. The first section is devoted to the study of the labor law in terms of sources and individual and collective work contracts. The second part, on the other hand, tackles various aspects of the Social Security Law, including optional and obligatory memberships, job-related risks (work casualties and job-related diseases), the unemployment allowance and the pension system.

LAW 311 General Penal Code 3(3, 0, 0)

Prerequisite: LAW 123

This course considers the general theory of both the crime and the penalty. It begins with the definition and functions of the criminal law and its relationship with other branches of law. A reference is also made to the main elements and types of any crime. The course will also tackle the main types of penalties, the purpose of punishment and the circumstances because of which the punishment can be increased or decreased.

LAW 315 Human Rights 3(3, 0, 0)

The course deals with the concept of human rights and its principles and their application in international declarations and conventions and in the basic systems of the Kingdom of Saudi Arabia. It also examines the rights of some individuals by virtue of their status as suspect, women and children. Additionally, it deals with legislative and judicial guarantees of human rights in domestic and international laws.

LAW 316 Zakat and Taxation System 3(3, 0, 0)

Prerequisite: LAW 111

The course introduces students to two important interrelated topics of the Public Financial Law, viz., Zakat and taxes. The first section sheds light on the concept of Zakat, its characteristics, objectives, zakat estimation and the assets subject to zakat in accordance with the Saudi Law. The second section, on the other hand, explores the tax concept, types of taxes, determination of taxable assets, tax collection procedures, tax disputes and tax dispute settlement.

LAW 319 Commercial Contracts and Banking Transactions 3(3, 0, 0)

Prerequisite: LAW 201

This course explores the general principles of commercial law, which regulate commercial papers. The particular rules relating to cheques, promissory note and other commercial papers are examined. This course also deals with the important bank transactions in terms of their legal effects, such as financial facilitating, bail, loans, letter of credit, standby letter of credit, transfer of money etc.

LAW 321 Bankruptcy and Company Law 3(3, 0, 0)

Prerequisite: LAW 201

This course deals with the general theory of companies, their types whether they are shareholding, ordinary or mixed. This course also deals with the legal system of bankruptcy, the pre-conditions in order to issue a decision of bankruptcy and the legal effects on such a decision. In addition, the course highlights the legal rules governing factual conciliation.

LAW 322 International Private Law 3(3, 0, 0)

Prerequisite: LAW 122

This course aims at acquainting students with the private international law, its topics and sources, the definition of nationality and its elements, the methods of acquisition and loss of nationality in the Saudi system, the legal status of foreigners, law conflict rules, international jurisdiction, and enforcement of foreign judgements.

LAW 332 Maritime and Aviation Law 3(3, 0, 0)

Prerequisite: LAW 201

This course covers the following topics: ships, maritime transport contracts, maritime liability, and maritime insurance. It also covers, air freights, legal regime of airspace, liability in air accidents etc.

LAW 335 Administrative Disputes 3(3, 0, 0)

Prerequisite: LAW 223

This course aims to familiarize students with the principle of legality and its guarantees, oversight of the administration acts with an indication of the characteristics of administrative disputes in addition to the formal conditions of the cancelation claim and the means of cancelation before administrative courts.

LAW 336 Banking Law and Islamic Banking 3(3, 0, 0)

Prerequisite: LAW 201

This course covers the following topics: interest, banking history, banking activities, commercial banks, the central bank, and Islamic Banking terms.

LAW 411 Special Penal Code 3(3, 0, 0)

Prerequisite: LAW 311

The course focuses on specific crimes regulated under Saudi Law. It mainly tackles the following list of crimes: bribing a public servant, bribery by public servants, crimes ancillary to bribery; currency /stamps forgery and counterfeit crimes; embezzlement of public money; dud check crimes, and money laundering. The course examines criminal acts under the Capital Market Law, drug-related crimes, smuggling, and cyber-crimes as well.

LAW 414 Penal Procedures Law 3(3, 0, 0)

Prerequisite: LAW 311

The course deals with the provisions pertaining to certain crimes in accordance with the provisions of the Islamic Sharia and the regulations stipulated in this regard in the Kingdom of Saudi Arabia, starting from the division of crimes according to jurisprudence (limits, retribution and restrictions) or legal consideration (individual crimes and money crimes).

LAW 415 Insurance Provisions 2(2, 0, 0)

This course acquaints students with the definition of insurance contract and its various forms (e.g. life, health, auto, etc.). It also tackles the risk of insurance, the rights and obligations of the insured and the insurer in addition to the expiry of the insurance contract, and the settlement of the insurance conflict.

LAW 416 Islmaic Procedural Law 3(3, 0, 0)

Islamic Procedural Law course represents an identification position between other subjects, significance, classification of criminal, civil and personal judicial law procedure, previous procedures, condition accompanying procedures, following procedures, and Islamic legal execution.

LAW 428 Judicial System and Pleadings 3(3, 0, 0)

This course examines the judicial system in detail. Topics covered include judicial authority – its hierarchy, composition, mandate, jurisdiction, and judges; pleadings law – definition, the nature of its rules; lawsuits – definition, classifications, their types in the Islamic doctrine and statutes; and pleadings' procedures.

LAW 432 Special Topics in Law 3(3, 0, 0)

Topics vary according to student and faculty interests

LAW 434 Graduation Project and Training 3(2, 0, 1)

This (Graduation Project) course is devoted to training students to write a research project according to the well-established scientific procedures. Students are required to review the related literature, formulate a research problem, identify the procedures to be followed to investigate the research project, apply the instrumentation to collect and analyze the data, and come up with the conclusions and recommendations. Students are also required to defend their research project in front of a panel of faculty members. One third of the course will be dedicated to the applied side of jurisprudence and legal studies in terms of the established procedures in the Sharia and administrative courts or before the various judicial bodies and committees in addition to the practical training inside the college in the form of mock trials/virtual courts.

COLLEGE OF BUSINESS AND MANAGEMENT

COLLEGE OF BUSINESS AND MANAGEMENT

Officers

Acting Dean:	Alrefai, Ahmed
Professors:	Shiyab, Ahmad; Ahmad, Shoab
Associate Professor:	Alrefai, Ahmed; Ali, Yousaf
Assistant Professors:	Gohar, Ali; Ali, Ijaz; Hyasat, Waleed; Alhazmi, Ola; Jayashree, G.
Lecturers:	Albalawi, Heba; Rabab'a, Laith

College Overview

The College of Business and Management was established in 2009 with a goal to offer high standard education in Business and Management Sciences. The college is structured around four departments:

1. The Management, Marketing, and Entrepreneurship Department, which offers programs in Business Administration and Marketing.
2. The Department of Human Resources
3. The Department of Logistics & Supply Chain Management.
4. The Accounting and Finance Department, which offers programs in Accounting and Finance.

Vision

To become a leading business college capable of equipping graduates with professional competences and commitment to business ethics to serve the business development needs in Tabuk and the rest of KSA.

Mission

The College of Business and Management is committed to achieve and maintain a recognized position as a credible provider of high quality undergraduate and graduate business education. We are committed to adopt focused teaching and research philosophy that combines theory and practice and imparting graduates with a commitment to life-long learning and professional competence. The College also prepares its graduates to be professionals who play an entrepreneurial role in the Kingdom and the region and are capable of conducting research, entrepreneurial and decision-making to contribute effectively in building their society according to the highest ethical standards.

Core Values

- Uncompromising pursuit of quality educational services to students in ways that enhance cognitive skills, cultivate personality and help the development of character
- Critical thinking and broad exposure to major global currents
- Life-long learning and investment in self-renewal
- Integrity and adherence to ethical behavior in all ways at all levels
- Community spirit and commitment to social service
- Reinforcement of national identity and cultural authenticity

Objectives

- Providing sound business education to students from the Tabuk area and other parts of the Kingdom.
- Graduating highly qualified employable business specialists who can meet the changing requirements of the labor market at the para-professional, professional and senior professional levels in such areas as Management, Marketing, Accounting, Finance, Human Resources, Logistics & Supply Chain Management, Management of Information Systems and related competencies.
- Providing faculty members with the needed facilities and with an international exposure to partner institutions in order for them to develop their academic expertise.
- Building close ties of cooperation with industry within and beyond Tabuk with a view to fostering strategic partnerships, cultivating various programs of cooperation and complementing each other in the interest of better management practices.
- Providing relevant open-ended, customized, function-specific and sector-specific management training programs to private and public organizations in Tabuk and the rest of the Kingdom.
- Building capacity for conducting applied research relevant to the needs of various companies and sectors.
- Cooperating with other Business Colleges in KSA and outside to build networks, leverage resources and better fulfill the mission.

Career Opportunities

The College Programs are committed to providing the local region's residents with meaningful, up- to-date skills and knowledge that will allow them to pursue successful careers and make deep impacts both within the Tabuk province, and across the Kingdom of Saudi Arabia. With these objectives in mind, the programs have been designed around fostering contemporary best practices and skills in line with the job opportunities within Tabuk and the Middle East.

As such, the College programs aim to provide the graduates with relevant business knowledge and practices to cater to these three key areas, and to help promote development, growth and prosperity in the region. Courses target the cultivation of practical business tools to pursue strategic development and integration of the different industrial and agricultural sectors with other prominent sectors in the region and to allow students to pursue managerial and administrative positions within the growing firms in those sectors. Accounting, Finance, Human Resource, Logistics, Management, and Marketing programs cater to the development of these key skills.

Graduates of the College's Bachelor Degree in Accounting and Finance are poised to take advantage of numerous job opportunities in financial institutions and major economic institutions within the Tabuk province itself, and in the growing Saudi and Gulf markets. In addition the Accounting and Finance programs enable graduates to join the growing financial services industry within Tabuk and become the future leaders within the Gulf's top financial services firms.

Similarly, the Management programs (Business, Human Resource, Marketing and Logistics) are designed to attract the best and brightest students from all regions within Saudi Arabia, to develop their management and administration skills and enable them to serve on the highest levels in different sectors including the military, government, and in the booming construction sector.

Admissions and Graduation Requirements

- Student admission to the Bachelor of the different college's programs is based on the requirements of the national center for evaluation and measurement, the general University admission criteria, as well as specific criteria set by the College of Business and Management. All direct admissions are decided by the University Admissions Committee.
- To graduate with a Bachelor in any of the different business programs, students must satisfactorily complete 138 credit hours with a cumulative average as decided by the University Council.
- All third year business students are required to fulfill a summer (July and August) internship period of at least eight weeks of specialized work on individual basis. This includes training and practice in an actual service in a technical, business, or governmental establishment under both faculty supervision by a mentor and corporate guidance by a preceptor who will acquaint students with the world of work. The preceptor will also help interns acquire the core values and basic skills necessary for an understanding of the business world. Interns will be assigned tasks and responsibilities commensurate with their skills and qualifications.

Academic Programs

The College of Business & Management offers a broad range of venues for study and exploration in the field of Business, Management and other financial fields. The programs offered in the college are meant to allow eligible students develop enhanced knowledge in the corresponding areas through a balanced curriculum of required/elective intermediate and advanced courses in specific business interests. Currently, the College hosts four departments offering a total of six undergraduate programs organized as follows:

- The The Department of Management, Marketing and Entrepreneurship offers the two programs:
  - Bachelor of Business Administration (BBA)
  - Bachelor of Marketing (BMK)
- The Department of Human Resource Management (HRM)
- The Logistics and Supply Chain Management (LSCM)
- The Department of Accounting and Finance offers the two programs:
  - Bachelor of Accounting (BACCT)
  - Bachelor of Finance (BFINA)

Course Coding System

ACCT	Accounting
BUSS	Business
DCSN	Business Decision Support Systems
ECON	Economics
ENTM	Entrepreneurship
FINA	Finance
HRM	Human Resource Management
LSCM	Logistics & Supply Chain Management
MNGT	Management
MKTG	Marketing

DEPARTMENT OF MANAGEMENT, MARKETING AND ENTREPENEURSHIP

Mission

The mission of the Department of Management, Marketing and Entrepreneurship is to:

a) provide undergraduate students quality higher education in Management, Marketing, and Entrepreneurship,

b) develop in student's management and marketing skills through coursework and practical experience,

c) provide synergistic knowledge and solutions between academia and industry, and

d) enrich the students' academic experience with global perspective and awareness of their leadership role in regional development.

Programs of Study

The Department of Management, Marketing and Entrepreneurship offers two undergraduate programs:

- Bachelor of Business Administration (BBA): The BBA program allows eligible students to develop enhanced knowledge in these areas through a balanced curriculum of required/elective intermediate and advanced courses. The courses offered in the BBA provide students with more in-depth skills and knowledge in their chosen track area. Alternatively, students may elect to pursue a generic bachelor's degree.
- Bachelor of Marketing (BMK): The Bachelor of Marketing program allows students to build complete knowledge related to marketing to include supply chain, logistics, advertisement, promotion, marketing plans, and integrated marketing communication. The eligible students are expected to successfully manage any task or assignment related to marketing in the actual work field.

BACHELOR OF BUSINESS ADMINISTRATION (BBA) PROGRAM

The BBA program allows the students to graduate with a bachelor's degree in Business Administration.

Program Objectives

- Provide students with a broader knowledge of business environment.
- Provide students with the knowledge and tools required for meaningful and successful careers.
- Prepare students for management responsibilities.
- Prepare students for further studies in graduate schools.
- Provide the educational background for various professional certification examinations.

Learning Outcomes

Upon completion of the BBA program, students will be able to:

a) Understand technical and quantitative aspects of management.

b) Focus on appropriate issues and develop proper solutions to problems faced by companies.

c) Communicate efficiently both orally and in writing.

d) Understand professional and ethical issues relevant to core business areas such as marketing, financial accounting, economics, information systems, strategic management, and organizational behavior.

Program Requirements

In order to graduate with a bachelor's degree in business administration, students are expected to complete a total of 138 credit hours by the end of their fourth year of studies. These are divided as follows:

University Requirements	37 Credits
College Requirements	50 Credits
Business Program Requirements	51 Credits
Total	**138 Credits**

University Requirements

Students working towards the bachelor's degree of Business Administration must complete a total of 37 credit hours in University requirements. The 37 credit hours in University general educational requirements for Bachelor program are as follows:

A. University Core Requirements (34 credits)

- 6 credits of Arabic: ARAB 101 and ARAB 201
- 15 credits of English communication skills: ENGL 100, ENGL 101, ENGL 102, ENGL 203, and ENGL 206
- 3 credits of Social and Cultural studies: SOCS 101
- 3 credits of Computing: IT 100
- 6 credits of Mathematics: MATH 100, STAT 100
- 1 credit of Physical Health Education: PHE 101

B. University Elective Requirements (3 credits)

- One 3 credit non-business elective courses

College Requirements

Students working towards the bachelor's degree of Business Administration must complete a total of 50 credit hours in College requirements. The required 50 credit hours for the Bachelor degree program are as follows:

- 6 credits of Accounting: ACCT 110 and ACCT 215
- 17 credits of Business: BUSS 110, BUSS 200, BUSS 210, BUSS 440, DCSN 305 and MATH 204.
- 6 credits of Economic: ECON 211, ECON 212.
- 3 credits of finance: FINA 110
- 3 credits of Management Information System: INFO 200
- 3 credits of Marketing: MKTG 210
- 3 credits of Human Resource Management: HRM 120
- 3 credits of Supply Chain Management: LSCM 220
- 3 credits of computing: CSC 100
- 3 credits of General Management: MNGT 110

Program Requirements

To graduate with a bachelor's degree of Business Administration program, students must complete the following 51 credit hours:

A. Core Requirements (42 credits)

- 41 credit hours: BUSS 330, BUSS 400, BUSS 445, BUSS 460, DCSN 200, DCSN 415, ENTM 420, LSCM 460, MNGT 215, MNGT 420, MNGT 328b, MNGT 430, MNGT 440, MNGT 460.
- One credit hour: A summer internship in Business (BUSS 346) is a 1 credit course which is required for a two-month period in the third year of studies. By the end of their internships, students have to write and submit a report to their advisors who are full-time faculty members.

B. Elective Requirements (9 Credits)

- 9 hours to be chosen from the following courses: ACCT 320, BUSS 490, FINA 215, INFO 400, LSCM 320, LSCM 435, MKTG 320, MKTG 330, MKTG 435, MKTG 450.

Study Plan

Year I

First Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
SOCS 101	Islamic Civilizations I	3	
MNGT 110	Principles of Management	3	
ENGL 100	General English	3	
IT 100	Information Technology	3	
MATH 100	Mathematics I	3	
ARAB 101	Basic Academic Arabic I	3	
	Total Credits	**18**	

Second Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 101	Basic Academic English I	3	ENG 100
ACCT 110	Financial Accounting	3	
STAT 100	Introduction to Probability & Statistics	3	MATH 100
CSC 100	Introduction to Computing	3	
HRM 120	Principles of HRM	3	
BUSS 200	Business Communication Skills	2	
PHE 101	Physical Health Education	1	
	Total Credits	**18**	

Year II

Third Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 102	Basic Academic English II	3	ENGL 101
FINA 110	Business Finance	3	
ARAB 201	Basic Academic Arabic II	3	ARAB 101
ECON 211	Principles of Microeconomics	3	
BUSS 110	Statistics & Data Analysis	3	STAT 100, MATH 100
MKTG 210	Principles of Marketing	3	
	Total Credits	**18**	

Fourth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ECON 212	Principles of Macroeconomics	3	ECON 211
ENGL 203	Advanced Academic English I	3	ENGL 102
LSCM 220	Introduction to Supply Chain Management	3	
INFO 200	Management Information Systems	3	MNGT 110, CSC 100
BUSS 210	Business Law	3	MNGT 110
MATH 204	Introduction for Business Math	3	MATH 100, STAT 100
	Total Credits	**18**	

Year III

Fifth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
DCSN 200	Managerial Decision Making	3	MNGT 110
ACCT 215	Managerial Accounting	3	ACCT 110
ENGL 206	Technical Writing	3	ENGL 203
MNGT 215	Organizational Behavior	3	MNGT 110
BUSS 330	Managerial Economics	3	Third year, ECON 211
ELECTIVE	Free University Elective	3	
	Total Credits	**18**	

Sixth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
BUSS 440	Strategic Management	3	Senior standing
DCSN 305	Operations Management	3	Third year standing, BUSS 110
MNGT 328b	Business Ethics	3	Third year standing, MNGT 110
ELECTIVE	Business Elective Course I	3	
ELECTIVE	Business Elective Course II	3	
MNGT 430	International Business & Management	3	Senior standing, MNGT 110
	Total Credits	**18**	

Summer Semester (1 Credit Hour)

Course	Title	Credits	Prerequisites
BUSS 346	Internship in Business (two months)	1	Senior standing

Year IV

Seventh Semester (14 Credit Hours)

Course	Title	Credits	Prerequisites
MNGT 460	Change Management	3	Senior standing
MNGT 420	Human Resource Management	3	Senior Standing, HRM 120
DCSN 415	Decision Support Systems: Applications in Management	3	DCSN 200
BUSS 445	Business Research Methods	3	Senior standing, BUSS 110, MNGT 110
BUSS 400	Developing Business Plan	2	Senior Standing
	Total Credits	**14**	

Eight Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
LSCM 460	Fundamentals of Innovation & Entrepreneurship	3	Senior standing
MNGT 440	Total Quality Management	3	Senior standing, BUSS 110
ENTM 420	Entrepreneurship & Small Business Management	3	BUSS 400
Elective	Business Elective III	3	
BUSS 460	Graduation Project	3	Senior Standing
	Total Credits	**15**	

Total Program Credits	**138**	

BACHELOR OF MARKETING (BMK) PROGRAM

Program Objectives

- Provide students with a broader knowledge of Marketing and Logistics.
- Provide students with the knowledge and tools required for meaningful and successful careers.
- Prepare students for management and technical responsibilities.
- Prepare students for further studies in graduate schools.
- Provide the educational background for various professional certification examinations such as Certified Marketing Analyst, Certified logistics Manager, etc.

Learning Outcomes

Upon completion of the BMK program, students will be able to

a) Understand of technical and quantitative aspects of marketing.

b) Conduct marketing research and base all decisions on statistical information.

c) Use improved marketing communication skills.

d) Understand professional and ethical issues relevant to marketing.

Program Requirements

In order to graduate with a Bachelor Degree in Marketing, students are expected to complete a total of 138 credit hours by the end of their fourth year of studies. These are distributed as follows:

University Requirements	37 Credits
College Requirements	50 Credits
Marketing Program Requirements	51 Credits
Total	**138 Credits**

University Requirements

Students working towards the bachelor's degree of Marketing must complete a total of 37 credit hours in University requirements. The 37 credit hours in University general educational requirements for Bachelor program are as follows:

A) University Core Requirements (34 credits)

- 6 credits of Arabic: ARAB 101 and ARAB 201
- 15 credits of English communication skills: ENGL 100, ENGL 101, ENGL 102, ENGL 203, and ENGL 206
- 3 credits of Social and Cultural studies: SOCS 101
- 3 credits of Computing: IT 100
- 6 credits of Mathematics: MATH 100, STAT 100
- 1 credit of Physical Health Education: PHE 101

B) University Elective Requirements (3 credits)

- One 3-credit non-business elective courses

College Requirements (50 credits)

Students working towards the Bachelor Degree of Marketing must complete a total of 50 credit hours in College requirements. The required 50 credit hours for Bachelor degree program are as follows:

- 6 credits of Accounting: ACCT 110 and ACCT 215
- 17 credits of Business: BUSS 110, BUSS 200, BUSS 210, BUSS 440, DCSN 305 and MATH 204.
- 6 credits of Economic: ECON 211, ECON 212.
- 3 credits of finance: FINA 110
- 3 credits of Management Information System: INFO 200
- 3 credits of Marketing: MKTG 210
- 3 credits of Human Resource Management: HRM 120
- 3 credits of Supply Chain Management: LSCM 220
- 3 credits of computing: CSC 100
- 3 credits of General Management: MNGT 110

Program Requirements (51 credits)

To graduate with a Bachelor Degree of Marketing program, students must complete 51 credit hours in program required courses which are:

A. Core Requirements (42 credits)

- 41 credit hours BUSS 400, BUSS 460, MKTG 315, MKTG 320, MKTG 325, MNGT 328b, MKTG 330, MKTG 390, MKTG 420, MKTG 430, MKTG 440, MKTG 460, MKTG 470, MKTG 480.
- One credit hour: A summer internship in Business (BUSS 346) is a 1 credit course which is required for a two-month period in the third year of studies. By the end of their internships, students have to write and submit a report to their advisors who are full-time faculty members.

B. Elective Requirements (9 Credits)

- 9 credit hours to be chosen from the following courses: ACCT 322, BUSS 490, FINA 215, INFO 400, LSCM 320, LSCM 435, HRM 460, MNGT 420, MKTG 435, MKTG 450.

Study Plan (138 Credits)

Year I

First Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
SOCS 101	Islamic Civilizations I	3	
MNGT 110	Principles of Management	3	
ENGL 100	General English	3	
IT 100	Information Technology	3	
MATH 100	Mathematics I	3	
ARAB 101	Basic Academic Arabic I	3	
	Total Credits	**18**	

Second Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 101	Basic Academic English I	3	ENG 100
ACCT 110	Financial Accounting	3	
STAT 100	Introduction to Probability and Statistics	3	MATH 100
CSC 100	Introduction to Computing	3	
MKTG 210	Principles of Marketing	3	
BUSS 200	Business Communication Skills	2	
PHE 101	Physical Health Education	1	
	Total Credits	**18**	

Year II

Third Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 102	Basic Academic English II	3	ENGL 101
FINA 110	Business Finance	3	
ARAB 201	Basic Academic Arabic II	3	ARAB 101
ECON 211	Principles of Microeconomics	3	
BUSS 110	Statistics & Data Analysis	3	STAT 100, MATH 100
HRM 120	Principles of Human Resource Management	3	
	Total Credits	**18**	

Fourth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ECON 212	Principles of Macroeconomics	3	ECON 211
ENGL 203	Advanced Academic English I	3	ENGL 102
LSCM 220	Introduction to Supply Chain Management	3	
INFO 200	Management Information Systems	3	CSC 100, MNGT110
BUSS 210	Business Law	3	MNGT 110
MATH 204	Introduction for Business Math	3	MATH 100, STAT 100
	Total Credits	**18**	

Year III

Fifth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
MKTG 315	Marketing Channels	3	MKTG 210
ACCT 215	Managerial Accounting	3	ACCT 110
ENGL 206	Technical Writing	3	ENGL 203
MKTG 320	Comparative marketing Strategies	3	MKTG 210
MKTG 390	Online Marketing	3	Third year standing, MKTG 210
ELECTIVE	Free University Elective	3	
	Total Credits	**18**	

Sixth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
BUSS 440	Strategic Management	3	Senior standing
DCSN 305	Operations Management	3	Third year standing, BUSS 110
MKTG 325	Product & Brand management	3	Third year standing, MKTG 210, LSCM 220
ELECTIVE	Marketing Elective Course I	3	
ELECTIVE	Marketing Elective Course II	3	
MKTG 330	International Marketing	3	Third year standing, MKTG 210
	Total Credits	**18**	

Summer Semester (1 Credit Hour)

Course	Title	Credits	Prerequisites
BUSS 346	Internship in Business (two months)	1	Senior standing
	Total Credits	**1**	

Year IV

Seventh Semester (14 Credit Hours)

Course	Title	Credits	Prerequisites
BUSS 400	Developing Business Plan	2	Senior Standing
MKTG 420	Marketing Research	3	Senior standing, MKTG 210, BUSS 110
MKTG 430	Professional Selling & Sale Management	3	Senior Standing, MKTG 210
MNGT 328b	Business Ethics	3	Third year standing, MNGT 110
MKTG 440	Consumer Behavior	3	Senior standing, MKTG 210
	Total Credits	**14**	

Eight Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
MKTG 460	Integrated Marketing Communication	3	Senior standing, MKTG 210, BUSS 200
MKTG 470	Distribution Management	3	Senior standing, MKTG 210
MKTG 480	Logistics & Transportation	3	Senior standing, MKTG 210, LSCM 220
Elective	Marketing Elective III	3	
BUSS 460	Graduation Project	3	Senior standing
	Total Credits	**15**	

Total Program Credits	**138**	

DEPARTMENT OF HUMAN RESOURCE MANAGEMENT

Mission

The mission of the Department of Human Resource Management is to provide high quality education that enables graduates to be highly competent professionals that can excel in leadership posts, pursue research and graduate studies in human resource management, foster societal leadership, and contribute to the prosperity and sustainability of our community and the Kingdom by instilling value-based attitudes with the highest ethical standards.

Programs of Study

The Department of Human Resource Management offers a Bachelor degree in Human Resource Management (HRM): The HRM program allows eligible students to develop enhanced knowledge in these areas through a balanced curriculum of required/elective intermediate and advanced courses. The courses offered in the HRM program provide students with more in-depth skills and knowledge in human resources and decision making process.

- Bachelor of Human Resource Management (HRM): The HRM program allows the students to graduate with a bachelor's degree in Human Resource Management.

Program Objectives

- Provide students with a solid theoretical and applied knowledge of the different aspects and processes of screening, recruiting, developing, training and managing human resources and Communication.
- Provide students with the knowledge and tools required for meaningful and successful careers.
- Prepare students for management and technical responsibilities.
- Promote written and critical thinking.
- Prepare students for further studies and research in graduate schools.
- Provide the educational background for various professional certification examinations such as Associate Professional in Human Resources APHR or Global Professional in Human Resources GPHR, etc.
- Promote the core ethical values underlying best practices in the various aspects of human resources management and communication.

Learning Outcomes

Upon completion of the HRM program, students will be able to

- Develop a basic comprehension of theories and concepts in the field of Human Resources;
- Demonstrate an understanding of the core ethical values underlying best practices in staffing, recruiting, training, compensating and developing human resources.
- Demonstrate knowledge of the research methods used in the many fields of Human Resources Management;
- Articulate the complexity of communication place in society and culture;
- Communicate effectively with different stakeholders. and;
- Demonstrate the critical inquiry and analysis skills needed to engage constructively in intellectual discourse within human resources management as a field of study and profession.

Program Requirements

In order to graduate with a bachelor's degree in HRM, students are expected to complete a total of 138 credit hours by the end of their fourth year of studies. These are divided as follows:

University Requirements	37 Credits
College Requirements	50 Credits
Business Program Requirements	51 Credits
Total	**138 Credits**

University Requirements

Students working towards the bachelor's degree of Business Administration must complete a total of 37 credit hours in University requirements. The 37 credit hours in University general educational requirements for Bachelor program are as follows:

A. University Core Requirements (34 credits)

- 6 credits of Arabic: ARAB 101 and ARAB 201
- 15 credits of English communication skills: ENGL 100, ENGL 101, ENGL 102, ENGL 203, and ENGL 206
- 3 credits of Social and Cultural studies: SOCS 101
- 3 credits of Computing: IT 100
- 6 credits of Mathematics: MATH 100 and STAT 100
- 1 credit of Physical Health Education: PHE 101

B. University Elective Requirements (3 credits)

- One 3-credit non-business elective course

College Requirements

Students working towards the bachelor's degree of HRM must complete a total of 50 credit hours in College requirements. The 50 credit hours in requirements for Bachelor program are as follows:

- 6 credits of Accounting: ACCT 110 and ACCT 215
- 17 credits of Business: BUSS 110, BUSS 200, BUSS 210, BUSS 440, DCSN 305 and MATH 204.
- 6 credits of Economic: ECON 211, ECON 212.
- 3 credits of finance: FINA 110
- 3 credits of Management Information System: INFO 200
- 3 credits of Marketing: MKTG 210
- 3 credits of Human Resource Management: HRM 120
- 3 credits of Supply Chain Management: LSCM 220
- 3 credits of computing: CSC 100
- 3 credits of General Management: MNGT 110

Program Requirements

To graduate with a bachelor's degree in Human Resource Management program, students must complete 51 credit hours of program required courses which are:

A. Core Requirements (42 credits)

- 42 credit hours: HRM 320, HRM 325, HRM 330, HRM 335, HRM 370, HRM 410, HRM 415, HRM 425, HRM 430, HRM 440, HRM 455, HRM 460, HRM 471 and MNGT 328b.
- One credit hour: A summer internship in Business (HRM 346) is a 1 credit course which is required for a two-month period in the third year of studies. By the end of their internships, students have to write and submit a report to their advisors who are full-time faculty members.

B. Elective Requirements (9 Credits)

- 9 hours to be chosen from the following courses: ENTM 420, FINA 215, HRM 445, HRM 450, HRM 465, HRM 470, MNGT 215, MNGT 440.

Study Plan (138 Credits)

Year I

First Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
SOCS 101	Islamic Civilizations I	3	
MNGT 110	Principles of Management	3	
ENGL 100	General English	3	
IT 100	Information Technology	3	
MATH 100	Mathematics I	3	
ARAB 101	Basic Academic Arabic I	3	
	Total Credits	**18**	

Second Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 101	Basic Academic English I	3	ENG 100
ACCT 110	Financial Accounting	3	
STAT 100	Introduction to Probability and Statistics	3	MATH 100
CSC 100	Introduction to Computing	3	
HRM 120	Principles of HRM	3	
BUSS 200	Business Communication Skills	2	
PHE 101	Physical Health Education	1	
	Total Credits	**18**	

Year II

Third Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 102	Basic Academic English II	3	ENGL 101
FINA 110	Business Finance	3	
ARAB 201	Basic Academic Arabic II	3	ARAB 101
ECON 211	Principles of Microeconomics	3	
BUSS 110	Statistics & Data Analysis	3	STAT 100, Math 100
MKTG 210	Principles of Marketing	3	
	Total Credits	**18**	

Fourth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ECON 212	Principles of Macroeconomics	3	ECON 211
ENGL 203	Advanced Academic English I	3	ENGL 102
LSCM 220	Introduction to Supply Chain Management	3	
INFO 200	Management Information Systems	3	CSC 100, MNGT 110
BUSS 210	Business Law	3	MNGT 110
MATH 204	Introduction for Business Math	3	MATH 100, STAT 100
	Total Credits	**18**	

Year III

Fifth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
HRM 325	Recruitment and Selection	3	Third year standing, HRM 120
ACCT 215	Managerial Accounting	3	ACCT 110
ENGL 206	Technical Writing	3	ENGL 203
HRM 320	Management & Organization	3	MNGT 110
HRM 370	Training & Development	3	HRM 120
ELECTIVE	Free University Elective	3	
	Total Credits	**18**	

Sixth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
BUSS 440	Strategic Management	3	Senior Standing,
DCSN 305	Operations Management	3	Third year standing BUSS 110,
HRM 330	Communication Management in Practice	2	HRM120, BUSS 200
ELECTIVE	HRM Elective Course I	3	
ELECTIVE	HRM Elective Course II	3	
HRM 335	International Business Environment	3	HRM 120, MNGT 110
	Total Credits	**17**	

Summer Semester (1 Credit Hour)

Course	Title	Credits	Prerequisites
HRM 346	Internship in HRM (two months)	1	Senior Standing
	Total Credits	**1**	

Year IV

Seventh Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
HRM 425	Managing the Employment Relationship	3	Senior standing,
HRM 410	Performance & Compensation Management	3	Senior standing
HRM 415	Negotiation & Dispute management	3	BUSS210, LSCM 220
HRM 430	Saudi Business Law	3	MNGT 110, BUSS 210
MNGT 328b	Business Ethics	3	Third year standing, MNGT 110
	Total Credits	**15**	

Eight Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
HRM 460	Fundamentals of Innovation & Entrepreneurship	3	Senior Standing
HRM 440	Occupational Health & Safety	3	Senior standing, HRM 430
HRM 455	Planning & Implementing Organizational Change	3	Senior Standing
Elective	HRM Elective III	3	
HRM 471	Graduation Project	3	Senior standing
	Total Credits	**15**	

Total Program Credits	**138**	

Department of Logistics & Supply Chain Management

Mission

The mission of the Department of Logistics & Supply Chain Management is to provide high quality education that enables graduates to be highly competent professionals that can excel in leadership posts, pursue research and graduate studies in logistics & supply chain management, foster societal leadership, and contribute to the prosperity and sustainability of our community and the Kingdom by instilling value-based attitudes with the highest ethical standards.

Bachelor of Logistics & Supply Chain Management (LSCM) Program

The LSCM program allows the students to graduate with a bachelor's degree in Logistics & Supply Chain Management. Bachelor of Logistics & Supply Chain Management (LSCM): The Bachelor of LSCM program allows students to build complete knowledge related to all aspects of the supply chain processes to include purchasing, logistics, and storing, distributing and transporting plans. Therefore, proper decision making process to sustainability and continuity of all goods & services is considered. The eligible students are expected to successfully manage any task or assignment related to LSCM in the actual work field.

Program Objectives

- Provide students with a solid theoretical and applied knowledge of supply chain theories, Logistics and Communication.
- Provide students with the knowledge and tools required for meaningful and successful careers.
- Prepare students for management and technical responsibilities.
- Promote written and critical thinking.
- Prepare students for further studies and research in graduate schools.
- Provide the educational background for various professional certification examinations such as Certified Marketing Analyst, Certified logistics Manager, etc.
- Promote the core ethical values underlying best practices in the various aspects of logistics and supply chain processes and communication.

Learning Outcomes

Upon completion of the LSCM program, students will be able to:

1. Develop a basic comprehension of theories and concepts in the field of Logistics & Supply Chain;
2. Demonstrate an understanding of the core ethical values underlying best practices in producing, purchasing, procurement, logistic, storing and selling of goods and services;
3. Demonstrate knowledge of the research methods used in the many fields of Logistics and Supply Chain Management;
4. Articulate the complexity of communication place in society and culture;
5. Communicate effectively in written form within the conventions of buying & selling as a discipline; and
6. Demonstrate the critical inquiry and analysis skills needed to engage constructively in intellectual discourse within supply chain management as a field of study and profession.

Program Requirements

In order to graduate with a Bachelor Degree in Logistics & Supply Chain Management, students are expected to complete a total of 138 credit hours by the end of their fourth year of studies. These are divided as follows:

- University Requirements	37 Credits
- College Requirements	50 Credits
- Marketing Program Requirements	51 Credits
Total	**138 Credits**

University Requirements

Students working towards the bachelor's degree of Logistics & Supply Chain Management must complete a total of 37 credit hours in University requirements. The 37 credit hours in University general educational requirements for Bachelor program are as follows:

A) University Core Requirements (34 credits)

- 6 credits of Arabic: ARAB 101 and ARAB 201
- 15 credits of English communication skills: ENG 100, ENGL 101, ENGL 102, ENGL 203, and ENGL 206
- 3 credits of Social and Cultural studies: SOCS 101
- 3 credits of Computing: IT 100
- 6 credits of Mathematics: MATH 100, STAT 100
- 1 credit of Physical Health Education: PHE 101

B) University Elective Requirements (3 credits)

- One 3-credit non-business elective course

College Requirements

Students working towards the Bachelor Degree of LSCM must complete a total of 50 credit hours in College requirements. The 50 credit hours in requirements for Bachelor program are as follows:

- 6 credits of Accounting: ACCT 110 and ACCT 215
- 17 credits of Business: BUSS 110, BUSS 200, BUSS 210, BUSS 440, DCSN 305 and MATH 204.
- 6 credits of Economic: ECON 211, ECON 212.
- 3 credits of finance: FINA 110
- 3 credits of Management Information System: INFO 200
- 3 credits of Marketing: MKTG 210
- 3 credits of Human Resource Management: HRM 120
- 3 credits of Logistics & Supply Chain Management: LSCM 220
- 3 credits of computing: CSC 100
- 3 credits of General Management: MNGT 110

Program Requirements (51 credits)

To graduate with a bachelor's degree in Logistics & Supply Chain Management program, students must complete 51 credit hours of core and elective courses:

A. Core Requirements (42 credits)

- 42 credit hours: FINA 316, LSCM 315, LSCM 320, LSCM 325, LSCM 330, LSCM 380, LSCM 390, LSCM 395, LSCM 400, LSCM 435, LSCM 440, LSCM 480, LSCM 485, LSCM 491.
- One credit hour: A summer internship in LSCM (LSCM 346) is a 1 credit course which is required for a two-month period in the third year of studies. By the end of their internships, students have to write and submit a report to their advisors who are full-time faculty members.

B. Elective Requirements (9 Credits)

- 9 hours to be chosen from the following courses: FINA 215, LSCM 450, LSCM 460, LSCM 470, LSCM 475, MKTG 320, MKTG 430 and MNGT 215.

Study Plan (138 Credits)

Year I

First Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
SOCS 101	Islamic Civilizations I	3	
MNGT 110	Principles of Management	3	
ENGL 100	General English	3	
IT 100	Information Technology	3	
MATH 100	Mathematics I	3	
ARAB 101	Basic Academic Arabic I	3	
	Total Credits	**18**	

Second Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 101	Basic Academic English I	3	ENG 100
ACCT 110	Financial Accounting	3	
STAT 100	Introduction to Probability & Statistics	3	MATH 100
CSC 100	Introduction to Computing	3	
LSCM 220	Introduction to Supply Chain Management	3	
BUSS 200	Business Communication Skills	2	
PHE 101	Physical Health Education	1	
	Total Credits	**18**	

Year II

Third Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 102	Basic Academic English II	3	ENGL 101
FINA 110	Business Finance	3	
ARAB 201	Basic Academic Arabic II	3	ARAB 101
ECON 211	Principles of Microeconomics	3	
BUSS 110	Statistics & Data Analysis	3	STAT 100, MATH 100
HRM 120	Principles of Human Resource Management	3	
	Total Credits	**18**	

Fourth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ECON 212	Principles of Macroeconomics	3	ECON 211
ENGL 203	Advanced Academic English I	3	ENGL 102
MKTG 210	Principles of Marketing	3	
INFO 200	Management Information Systems	3	CSC 100, MNGT 110
BUSS 210	Business Law	3	MNGT 110
MATH 204	Introduction for Business Math	3	MATH 100, STAT 100
	Total Credits	**18**	

Year III

Fifth Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
LSCM 315	Purchasing & Procurement Management	3	Third year standing, LSCM 220
ACCT 215	Managerial Accounting	3	ACCT 110
ENGL 206	Technical Writing	3	ENGL 203
LSCM 320	Supply Chain Strategies	3	Third year standing, LSCM 220
LSCM 380	Communication Management in Practice	2	LSCM 220, BUSS 200
ELECTIVE	Free University Elective	3	
	Total Credits	**17**	

Sixth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
BUSS 440	Strategic Management	3	Senior standing
DCSN 305	Operations Management	3	Third year standing, BUSS 110
LSCM 325	Product & Brand management	3	Third year standing, MKTG 210, LSCM 220
ELECTIVE	LSCM Elective Course I	3	
ELECTIVE	LSCM Elective Course II	3	
FINA 316	Principles of Insurance	3	FINA 110
	Total Credits	**18**	

Summer Semester (1 Credit Hour)

Course	Title	Credits	Prerequisites
LSCM 346	Internship in LSCM (two months)	1	Senior Standing
	Total Credits	**1**	

Year IV

Seventh Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
LSCM 440	Quality & Process Management	3	Senior Standing, DCSN 305
LSCM 390	Technology in Logistics & Inventory Management	3	LSCM 220, INFO 200
LSCM 435	Negotiation & Dispute Resolution	3	BUSS 210, LSCM 220
LSCM 400	Advanced Management Information System	3	Senior standing, INFO 200
LSCM 330	International Marketing	3	Third year standing, MKTG 210
	Total Credits	**15**	

Eight Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
LSCM 485	Logistics using Cloud Computing	3	Senior Standing, INFO 200
LSCM 395	Distribution & Warehouse Management	3	Third year standing, LSCM 220
LSCM 480	Logistics & Transportation	3	Senior standing, MKTG 210, LSCM 220
LSCM 491	Graduation Project	3	Senior standing
Elective	LSCM Elective III	3	
	Total Credits	**15**	

Total Program Credits	**138**	

DEPARTMENT OF ACCOUNTING AND FINANCE

Mission

The mission of the Department of Accounting and Finance is to cultivate exceptional accounting and finance professionals through a transformative learning experience that seamlessly integrates cutting-edge research with real-world application. We foster a culture of lifelong learning, ethical conduct, and community engagement, empowering our graduates to become professionals and leaders who contribute to the constantly changing local and global business landscape.

Academic Programs

The Department of Accounting and Finance offers two undergraduate programs:

- Bachelor of Accounting (BACCT): The BACCT program provides students with a multi-skilled accounting degree with strong emphasis on both accounting and financial management, both being essential business tools.
- Bachelor of Finance (BFINA): The BFINA program enhances students' abilities and skills in the areas of financial management. The program will expand its scope to teach students technical skills that will allow them to manage financial positions competitively.

BACHELOR OF ACCOUNTING PROGRAM

Programs Objectives

- Provide students with a broader knowledge of accounting techniques and theories.
- Provide students with the knowledge and tools required successful career in the accounting field.
- Prepare students for sensitive accounting responsibilities.
- Educate students on the latest accounting theories for further studies in graduate schools.
- Provide the educational background for various professional certification examinations such as CPA etc.

Learning Objectives

Upon completion of the BACCT program, students will be able to:

- Understand accounting technical and quantitative aspects.
- Conduct accounting practices
- Use statistical and quantitative skills.
- Understand professional and ethical issues relevant to accounting.

Program Requirements

In order to graduate with a Bachelor Degree in Accounting, students are expected to complete a total of 138 credit hours by the end of their fourth year of studies. These are divided as follows:

University Requirements	37 Credits
College Requirements	50 Credits
Program Requirements	51 Credits
Total	**138 Credits**

University Requirements

Students working towards the Bachelor Degree of Accounting must complete a total of 36 credit hours in University requirements. The 37 credit hours in University general educational requirements for Bachelor program are as follows:

A) University Core Requirements (34 credits)

- 6 credits of Arabic: ARAB 101 and ARAB 201
- 15 credits of English communication skills: ENGL 100, ENGL 101, ENGL 102, ENGL 203, and ENGL 206
- 3 credits of Social and Cultural studies: SOCS 101
- 3 credits of Computing: IT 100
- 6 credits of Mathematics: MATH 100, STAT 100
- 1 credit in Physical Health Education: PHE 101

B) University Elective Requirements (3 credits)

- One 3-credit non-business elective course

College Requirements

Students working towards the Bachelor Degree of Accounting must complete a total of 50 credit hours in College requirements. The 50 credit hours in requirements for Bachelor program are as follows:

- 6 credits of Accounting: ACCT 110 and ACCT 215
- 17 credits of Business: BUSS 110, BUSS 200, BUSS 210, BUSS 440, DCSN 305 and MATH 204.
- 6 credits of Economic: ECON 211, ECON 212.
- 3 credits of Finance: FINA 110
- 3 credits of Management Information System: INFO 200
- 3 credits of Marketing: MKTG 210
- 3 credits of General Management: MNGT 110
- 3 credits in Human Resource Management HRM 120
- 3 credits in Logistics & Supply Chain Management: LSCM 220
- 3 credits in Computing: CSC 100

Program Requirements

To graduate with a Bachelor Degree of Accounting program, students must complete 51 credit hours in Business and Management courses which are:

A) Program Core Requirements (42 credits)

- 41 credit hours: ACCT 300, ACCT 321, ACCT 322, ACCT 323, ACCT 324, ACCT 332, ACCT 422, ACCT 426, ACCT 427, ACCT 429, ACCT 435, ACCT 440, ACCT 452, and BUSS 451.
- One credit hour: A summer internship in Accounting (BUSS 346) is a 1 credit course which is required for a two-month period in the third year of studies. By the end of their internships, students have to write and submit a report to their advisors who are full-time faculty members.

B) Program Elective Requirements (9 Credits)

- 9 hours (3 courses) to be chosen from: ACCT 423, ACCT 424, ACCT 425, ACCT 430, ACCT 432, ACCT 437, ACCT 445, ACCT 447, ACCT 450.

Study Plan (138 Credits)

Year I

First Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
SOCS 101	Islamic Civilizations I	3	
MNGT 110	Principles of Management	3	
ENGL 100	General English	3	
IT 100	Information Technology	3	
MATH 100	Mathematics I	3	
ARAB 101	Basic Academic Arabic I	3	
	Total Credits	**18**	

Second Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 101	Basic Academic English I	3	ENG 100
ARAB 201	Basic Academic Arabic II	3	ARAB 101
STAT 100	Introduction to Probability & Statistics	3	MATH 100
CSC 100	Introduction to Computing	3	
HRM 120	Principles of HRM	3	
BUSS 200	Business Communication Skills	2	
PHE 101	Physical Health Education	1	
	Total Credits	**18**	

Year II

Third Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 102	Basic Academic English II	3	ENGL 101
LSCM 220	Introduction to Supply Chain Management	3	
FINA 110	Business Finance	3	
ECON 211	Principles of Microeconomics	3	
BUSS 110	Statistics & Data Analysis	3	STAT 100, MATH 100
MKTG 210	Principles of Marketing	3	
	Total Credits	**18**	

Fourth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ECON 212	Principles of Macroeconomics	3	ECON 211
ENGL 203	Advanced Academic English I	3	ENGL 102
ARAB 201	Basic Academic Arabic II	3	ARAB 101
INFO 200	Management Information Systems	3	CSC 100, MNGT 110
BUSS 210	Business Law	3	MNGT 110
ACCT 215	Management Accounting	3	ACCT 110
	Total Credits	**18**	

Year III

Fifth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ACCT 300	Accounting For Non-profit Organizations	3	ACCT 110
ACCT 321	Intermediate Financial Accounting-I	3	ACCT 110
ACCT 322	Accounting in Islamic Banking	3	ACCT 110
ENGL 206	Technical Writing	3	ENGL 203
ELECTIVE	Free Elective-1	3	
MATH 204	Introduction for Business Math	3	MATH 100, STAT 100
	Total Credits	**18**	

Sixth Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
DCSN 305	Operations Management	3	Third Year standing, BUSS 110
ACCT 323	Introduction to Arabic/English Financial Statements	2	ACCT 110
ACCT 324	Professional Practices and Ethics in Accounting	3	ACCT 110
ACCT 332	Computer Accounting	3	ACCT 110, INFO 200
ELECTIVE	Accounting Elective-I	3	
ELECTIVE	Accounting Elective-II	3	
	Total Credits	**17**	

Summer Semester (1 Credit Hour)

Course	Title	Credits	Prerequisites
BUSS 346	Internship in Business (two months)	1	Senior standing
	Total Credits	**1**	

Year IV

Seventh Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
ACCT 422	Intermediate Financial Accounting-II	3	ACCT321
ACCT 426	Sustainability Accounting and Governance	3	Senior standing, ACCT 110
ACCT 427	Zakat & Tax Accounting	3	Senior standing, ACCT 321
ACCT 429	Advance Management Accounting	3	Senior standing, ACCT 215
BUSS 440	Strategic Management	3	Senior standing
	Total Credits	**15**	

Eight Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
ACCT 435	Accounting Information System	3	ACCT 332
ACCT 440	Auditing and Assurance Services	3	Senior standing, ACCT 110
ACCT 452	Financial Report Analysis	3	Senior standing, ACCT 110
BUSS 451	Graduation Project	3	Senior standing
ELECTIVE	Accounting Elective-III	3	
	Total Credits	**15**	

Total Program Credits	**138**	

BACHELOR OF FINANCE (BFINA) PROGRAM

Programs Objectives

- Provide students with the ability to prepare and interpret financial statements.
- Prepare students to efficiently write and apply financial advances in companies' valuation techniques and risk management.
- Graduates will be able to state different business functions
- Identify and address financial problems and evaluate different investment opportunities
- Educate students on the latest finance theories for further studies in graduate schools.
- Provide the educational background for various professional finance certification examinations.

Learning Outcomes

Upon completion of the BFINA program, students will be able to

a) Develop various business concepts for solving financial problems and responding to challenges facing the / within organizations

b) Conduct financial practices

c) Demonstrate readiness for finance responsibilities like designing appropriate tools of analysis

d) Use statistical and quantitative skills.

e) Understand professional and ethical issues relevant to finance.

Program Requirements

In order to graduate with a bachelor's degree in finance, students are expected to complete a total of 138 credit hours by the end of their fourth year of studies. These are divided as follows:

University Requirements	37 Credits
College Requirements	50 Credits
Finance Program Requirements	51 Credits
Total	**138 Credits**

University Requirements

Students working towards the bachelor's degree of Finance must complete a total of 37 credit hours in University requirements. The 37 credit hours in University general educational requirements for Bachelor program are as follows:

A) University Core Requirements (34 credits)

- 6 credits of Arabic: ARAB 101 and ARAB 201
- 15 credits of English communication skills: ENG 100, ENGL 101, ENGL 102, ENGL 203, and ENGL 206
- 3 credits of Social and Cultural studies: SOCS 101
- 3 credits of Computing: IT 100
- 6 credits of Mathematics: MATH 100, STAT 100
- 1 credit of Physical Health Education: PHE 101

B) University Elective Requirements (3 credits)

- One 3-credit non-business elective course

College Requirements

Students working towards the bachelor's degree of Finance must complete a total of 50 credit hours in College requirements. The 50 credit hours in requirements for Bachelor program are as follows:

- 6 credits of Accounting: ACCT 110 and ACCT 215
- 17 credits of Business: BUSS 110, BUSS 200, BUSS 210, BUSS 440, DCSN 305 and MATH 204.
- 6 credits of Economic: ECON 211, ECON 212.
- 3 credits of finance: FINA 110
- 3 credits of Management Information System: INFO 200
- 3 credits of Marketing: MKTG 210
- 3 credits of General Management: MNGT 110
- 3 credits of Human Resource Management: HRM 120
- 3 credits of Logistics & Supply Chain Management: LSCM 220
- 3 credits in Computing: CSC 100

Finance Program Requirements

To graduate with a bachelor's degree of Finance program, students must complete 51 credit hours in Business and Management courses which are:

A) Program Core Requirements (42 credits)

- 41 credit hours: FINA 215, FINA 310, FINA 311, FINA 312, FINA 316, FINA 370, FINA 390, FINA 410, FINA 427, FINA 430, FINA 450, FINA 452, FINA 491, and BUSS 451.
- One credit hour: A summer internship in Finance (BUSS 346) is a 1 credit course which is required for a two-month period in the third year of studies. By the end of their internships, students have to write and submit a report to their advisors who are full-time faculty members.

B) Program Elective Requirements (9 Credits)

- 9 hours (3 courses) to be chosen from: FINA 314, FINA 351, FINA 353, FINA 411, FINA 412, FINA 420, FINA 421, FINA 423, FINA 425, and FINA 459.

Study Plan (138 Credits)

Year I

First Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
SOCS 101	Islamic Civilizations I	3	
MNGT 110	Principles of Management	3	
ENGL 100	General English	3	
IT 100	Information Technology	3	
MATH 100	Mathematics I	3	
ARAB 101	Basic Academic Arabic I	3	
	Total Credits	**18**	

Second Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 101	Basic Academic English I	3	ENG 100
ACCT 110	Financial Accounting	3	
STAT 100	Introduction to Probability & Statistics	3	MATH 100
CSC 100	Introduction to Computing	3	
HRM 120	Principles of HRM	3	
BUSS 200	Business Communication Skills	2	
PHE 101	Physical Health Education	1	
	Total Credits	**18**	

Year II

Third Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 102	Basic Academic English II	3	ENGL 101
LSCM 220	Introduction to Supply Chain Management	3	
FINA 110	Business Finance	3	
ECON 211	Principles of Microeconomics	3	
BUSS 110	Statistics & Data Analysis	3	STAT 100, MATH 100
MKTG 210	Principles of Marketing	3	
	Total Credits	**18**	

Fourth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ECON 212	Principles of Macroeconomics	3	ECON 211
ENGL 203	Advanced Academic English I	3	ENGL 102
ARAB 201	Basic Academic Arabic II	3	ARAB 101
INFO 200	Management Information Systems	3	CSC 100 , MNGT 110
BUSS 210	Business Law	3	MNGT 110
ACCT 215	Management Accounting	3	ACCT 110
	Total Credits	**18**	

Year III

Fifth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
MATH 204	Introduction for Business Math	3	MATH 100, STAT100
FINA 215	Financial Market and Institution	3	FINA 110
FINA 310	Islamic Finance and Management	3	Third year standing, FINA 110
FINA 311	Corporate Finance	3	Third year standing, FINA 110
ENGL 206	Technical Writing	3	ENGL 203
ELECTIVE	Free Elective-1	3	
	Total Credits	**18**	

Sixth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
DCSN 305	Operations Management	3	Third year standing, BUSS 110
FINA 312	Ethics in Finance	3	Third year standing
FINA 316	Principles of insurance	3	FINA 110
FINA 370	Portfolio theory and investment analysis	3	FINA 215
FINA 390	Valuation Methods	3	FINA 215
ELECTIVE	Finance Elective-I	3	
	Total Credits	**18**	

Summer Semester (1 Credit Hour)

Course	Title	Credits	Prerequisites
BUSS 346	Internship in Business (two months)	1	Senior standing
	Total Credits	**1**	

Year IV

Seventh Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
FINA 410	Financial planning and control	3	Senior standing, FINA 311
FINA 427	Real estate finance and investment	3	Senior standing, FINA 110
FINA 430	International Financial Management	3	FINA 311
BUSS 440	Strategic Management	3	Senior standing
ELECTIVE	Finance Elective-II	3	
	Total Credits	**15**	

Eight Semester (14 Credit Hours)

Course	Title	Credits	Prerequisites
FINA 450	Risk management in financial institutions	3	Senior standing, FINA 215
FINA 452	Financial Report Analysis	3	Senior standing, FINA 110
FINA 491	Applied Finance Lab	2	Senior standing
BUSS 451	Graduation Project	3	Senior standing
ELECTIVE	Finance Elective-III	3	
	Total Credits	**14**	

Total Program Credits	**138**	

Elective Courses

A) Business Electives

Course	Title	Credits	Prerequisites
ACCT 322	Accounting in Islamic Banking	3	ACCT 110
BUSS 490	Special Topics in Business	3	Senior standing
INFO 400	E-commerce: strategies and applications	3	Senior standing, INFO 200
LSCM 320	Supply Chain Strategies	3	Third year standing, LSCM 220
LSCM 435	Negotiation & Dispute Resolution	3	BUSS 210, LSCM 220
MKTG 320	Competitive Marketing Strategies	3	MKTG 210
MKTG 330	International Marketing	3	Third year standing, MKTG 210
MKTG 435	Public Relations	3	Senior standing, MKTG 210
MKTG 450	Logistics Marketing Management	3	Senior Standing, MKTG 210

B) Marketing Electives

Course	Title	Credits	Prerequisites
ACCT 322	Accounting in Islamic Banking	3	ACCT 110
BUSS 490	Special Topics in Business	3	Senior Standing
FINA 215	Financial Markets & Institutions	3	FINA 110
INFO 400	E-Commerce: Strategies & Applications	3	Senior Standing, INFO 200
LSCM 320	Supply Chain Strategies	3	Third year standing, LSCM 220
LSCM 435	Negotiation & Dispute Resolution	3	LSCM 220, BUSS 210
HRM 460	Fundamentals of Innovation & Entrepreneurship	3	Senior Standing
MKTG 435	Public Relations	3	Senior Standing, MKTG 210
MKTG 450	Logistics Marketing Management	3	Senior Standing, MKTG 210
MNGT 420	Human Resource Management	3	Senior Standing, HRM 120

C) Accounting Electives

Course	Title	Credits	Prerequisites
ACCT 423	Advance Accounting	3	ACCT 321
ACCT 424	Accounting theory	3	ACCT 321
ACCT 425	Cost Accounting	3	Senior standing, ACCT 215
ACCT 430	Introduction to Auditing	3	ACCT 321
ACCT 432	Forensic Accounting and Cyber Security	3	Senior standing, ACCT 110, INFO 200
ACCT 437	Value Added Tax	3	ACCT 427
ACCT 445	International Accounting	3	Senior standing, ACCT 215
ACCT 447	Advanced Cases in Zakat and Taxes	3	ACCT 427
ACCT 450	Digital Auditing	3	ACCT 332

D) Finance Electives

Course	Title	Credits	Prerequisites
FINA 314	Intermediate Financial Management	3	Third year standing, FINA 110
FINA 351	Advance insurance	3	FINA 316
FINA 353	Advance banking	3	FINA 215
FINA 411	Financial engineering	3	Senior standing, FINA 215
FINA 412	Financial derivatives	3	Senior standing, FINA 215
FINA 420	Investment management	3	Senior standing, FINA 215
FINA 421	Financial Data Analysis	3	Senior standing, FINA 215, BUSS110
FINA 423	Fixed Income Securities Valuation	3	FINA 390
FINA 425	Commercial bank management	3	Senior standing, FINA 215
FINA 459	International banking	3	FINA 425

E) Human Resource Electives

Course	Title	Credits	Prerequisites
ENTM 420	Entrepreneurship & Small Business Management	3	BUSS 400
FINA 215	Financial Markets & Institutions	3	FINA 110
HRM 445	HR Analytics	3	Senior Standing, BUSS110, HRM 120
HRM 450	Transition to employment	3	HRM 120
HRM 465	Organizational Leadership	3	MNGT 215
MNGT 215	Organizational Behavior	3	MNGT 110
MNGT 440	Total Quality Management	3	Senior standing, BUSS110

F) Logistics & Supply Chain Management Electives

Course	Title	Credits	Prerequisites
FINA 215	Financial Markets & Institutions	3	FINA 110
MKTG 430	Professional Selling & Sales Management	3	Senior standing, MKTG 210
LSCM 450	Logistic Marketing Management	3	Senior Standing, MKTG 210, LSCM 220
LSCM 470	Distribution Management	3	Senior Standing, LSCM 220
LSCM 475	Supply Chain Analysis	3	Senior Standing, BUSS 110, LSCM 220
MKTG 320	Competitive Marketing Strategies	3	MKTG 210
MNGT 215	Organizational Behavior	3	MNGT 110
FINA 215	Financial Markets & Institutions	3	FINA 110

G) Recommended Non Business (Free) Electives

Course	Title	Credits	Prerequisites
ENGL 123	Pronunciation & speech	3	
FREN 101	Basic French	3	
LAW 101	Principles of Law	3	
LAW 223	Administrative Contracts	3	
LAW 335	Administrative Disputes	3	
STAT 230	Probability and Statistics	3	MATH 100, STAT 100, MATH 102
SOCS 203	History of the Kingdom of Saudi Arabia	3	
ENGL 123	Pronunciation & speech	3	
FREN 101	Basic French	3	
LAW 101	Principles of Law	3	

Course Descriptions

Accounting Courses:

ACCT 110 Financial Accounting 3(3, 0, 0)

An introduction to financial accounting that covers the use, interpretation, and analysis of the principal financial statements and other sources of financial information from a national and international perspective.

ACCT 215 Managerial Accounting 3(3, 0, 0)

Prerequisites: ACCT 110

This course covers the use, interpretation, and analysis of management accounting information for management decision-making, planning, and control of operations. The focus is on cost behavior, cost measurement, budgeting, performance measurement and valuation, responsibility accounting, and product costing.

ACCT 300 Accounting for Non- Profit Organizations 3(3, 0, 0)

Prerequisites: ACCT 110

This course discusses the basic framework, principles and concepts underlying accounting for governmental and not-for-profit organizations. This includes budgeting, fund accounting, and accounting and financial reporting for local governmental units, hospitals, voluntary health and welfare organizations, and other non-profit entities.

ACCT 321 Intermediate Financial Accounting I 3(3, 0, 0)

Prerequisites: ACCT 110

This course covers concepts and standards of external financial reporting, systems to record and prepare financial accounting information, contents and presentation of basic financial statements, and financial reporting issues of assets.

ACCT 322 Accounting in Islamic banking 3(3, 0, 0)

Prerequisites: ACCT 110

The basic mechanism of the Islamic bank is to accept deposits from surplus persons on the liability side and offer financing on the assets side to the deficit persons. The basic idea is to activate this mechanism on acceptable Islamic modes which preclude payment or receipt of interest and conform to the rules of Shariah.

ACCT 323 Introduction to Arabic/English Financial Statements 3(3, 0, 0)

Prerequisites: ACCT 110

The purpose of this course is to provide students with the basic concepts underlying the preparation of financial statements and financial reporting in the Arabic / English language. Many companies in Saudi Arabia require their employees to have a mastery level in English / Arabic. This has been seen as a critical requirement of knowledge in the public and private sector. Students are expected to be able to classify and present the requirements of profit or loss and other comprehensive income statement and statement of financial position in Arabic / English.

ACCT 324 Professional Practices and Ethics in Accounting 3(3, 0, 0)

Prerequisites: ACCT 110

The course aims to explore a range of employability skills which will enhance students' future transition to professional life and assist in career planning. It will also provide opportunities for students to consider the professional skills needed within a work environment and to develop the employability skills needed for future career progression.

ACCT 332 Computer Accounting 3(3, 0, 0)

Prerequisites: ACCT 110, INFO 200

This course introduces students to a multi-module accounting software program designed for small to medium-size businesses. Students will use the software and their knowledge of Generally Accepted Accounting Principles (GAAP) to create and maintain accounting records, including period end procedures and the creation of financial statements for sole proprietorships.

ACCT 422 Intermediate Financial Accounting II 3(3, 0, 0)

Prerequisites: ACCT 321

This course covers concepts of financial reporting related to liabilities, equity, and other selected financial reporting issues and disclosure.

ACCT 423 Advance Accounting 3(3, 0, 0)

Prerequisites: ACCT 321

This rigorous technical-based course introduces the conceptual basis for consolidated accounting, and develops the technical application of advanced financial reporting issues including consolidation accounting and reporting, variable interest entities, joint venture accounting, foreign currency transactions and hedge accounting, translation and consolidation of financial statements stated in foreign currencies, segmented reporting and not-for-profit entities.

ACCT 424 Accounting Theory 3(3, 0, 0)

Prerequisites: ACCT 321

Selected contemporary and international issues in financial accounting will be covered with an emphasis on reading and interpreting professional accounting literature to prepare financial statements according to generally accepted accounting principles.

ACCT 425 Cost Accounting 3(3, 0, 0)

Prerequisites: Senior standing, ACCT 215

A course on accounting in manufacturing operations; cost concepts and classifications; cost accounting cycle; accounting for materials, labor, and burden; process cost accounting; budgeting; standard costs; cost reports; direct costing and differential cost analysis; cost-volume-profit analysis and gross profit analysis.

ACCT 426 Sustainability Accounting and Governance 3(3, 0, 0)

Prerequisites: Senior standing, ACCT 110

This is an advanced course that addresses issues related to sustainability in accounting. In this course students shall understand that corporations have responsibility beyond generating the shareholder's wealth. In fact, to prosper financially, corporations need to be accountable and maximize its environmental, social and governance (ESG) performance. As such, this course helps to identify, quantify, communicate and analyze these sustainability factors that shall affect company's value.

ACCT 427 Zakat and Tax Accounting 3(3, 0, 0)

Prerequisites: ACCT 321

This course familiarize the students with the basic principles of Zakat and Taxes and its calculation. Also it shall introduces the students with the new Income tax law in the Kingdom of Saudi Arabia, and its main features.

ACCT 429 Advance Management Accounting 3(3, 0, 0)

Prerequisites: Senior standing, ACCT 215

This upper-level undergraduate course builds upon your foundation in managerial accounting, diving deeper into advanced techniques and contemporary issues relevant to today's business environment. It will explore how management accounting transcends mere financial reporting, becoming a strategic tool for informed decision-making, performance measurement, and cost management.

ACCT 430 Introduction to Auditing 3(3, 0, 0)

Prerequisites: ACCT 321

An introduction to auditing and the professional responsibilities of a career in accounting, the course covers a comprehensive study of procedures used in the verification of financial statements. Topics include the legal and ethical responsibilities of accountants; professional auditing standards; international auditing standards; the acquisition, evaluation, and documentation of audit evidence; reports on the results of the engagement, evaluation in internal control, compliance testing, substantive testing, and statistical sampling and auditing EDP.

ACCT 432 Forensic Accounting and Cyber Security 3(3, 0, 0)

Prerequisites: Senior standing, ACCT 110, INFO 200

This course provides fundamental knowledge about forensic accounting. Topics include the professional standards that apply to forensic accounting, legal system, managing forensic engagement, gathering information, discovery, and reporting. It also covers some cybersecurity topics such as cyberattacks and data protection.

ACCT 435 Accounting Information System 3(3, 0, 0)

Prerequisites: ACCT 322

This course explores in detail several typical Accounting Information System (AIS) application subsystems, such as order entry/sales, billing/receivables/cash receipts, inventory, purchasing/ accounts payable/cash disbursements, payroll, and materials planning/production. This course includes understanding, documenting, designing, using, and auditing these application subsystems.

ACCT 437 Value Added Tax 3(3, 0, 0)

Prerequisites: ACCT 427

The emphasis of this course is to gain an in-depth practical knowledge of the VAT legislation and get a clear understanding of the principles of VAT and application of the framework as it applies in Saudi Arabia.

ACCT 440 Auditing and Assurance Services 3(3, 0, 0)

Prerequisites: Senior standing, ACCT 110

The course introduces the International Standards on Auditing (ISAs) on a standard-by-standard basis, covering the principles, application, and how to use ISAs in practice.

ACCT 445 International Accounting 3(3, 0, 0)

Prerequisites: Senior standing, ACCT 215

This course focuses on the main challenges faced by professional accountants in international business that includes the financial reporting standards, foreign currency, budgeting, management control, and the analysis of the profit plan.

ACCT 447 Advanced Cases in Zakat and Taxes 3(3, 0, 0)

Prerequisites: ACCT 427

The emphasis of this course is to gain an in-depth practical knowledge of the zakat and taxes legislation and get a clear understanding of the principles of zakat and taxes and relevant application to cases as it applies in Saudi Arabia. Upon completion of this course, students will gain proficiency in calculation of zakat and taxes.

ACCT 450 Digital Auditing 3(3, 0, 0)

Prerequisites: ACCT 332

This course examines audit function in a computerized environment. It focuses on the guidelines for performing IT audits and building automated audit functions. Topics include risks associated with the dynamic area of IT auditing, auditing IT governance controls, security concerns, Computer-Assisted Audit Tools and Techniques (CAATTs), and the automation of audit functions.

ACCT 452 Financial Report Analysis 3(3, 0, 0)

Prerequisites: Senior standing, ACCT 110

Financial statement information is the basis for a wide range of business decisions. Managers use financial statements to monitor their firm's performance relative to competitors, to communicate with external investors, to help judge what financial policies they should pursue, and to evaluate potential new businesses to acquire.

Business Courses:

BUSS 110 Statistics and Data Analysis 3(3, 0, 0)

Prerequisites: STAT 100, MATH 100

This course covers basic statistical concepts and introduces some advanced concepts and tools that are useful for decision-makers. Topics include descriptive statistics, probability distribution, statistical inference (hypothesis testing and analysis of variance) from small and large samples of data, correlation and regression, forecasting and time series and statistical quality controls. An emphasis will be given to the understanding, applicability of statistical analysis and interpretation of the output of analyses using Excel spreadsheet tools and small mini real-life cases.

BUSS 200 Business Communication Skills 2(2, 0, 0)

Prerequisite: None

This course is designed to introduce students to the various communication skills needed in a typical work environment. Mastering these skills plays a profound role in shaping and advancing professional careers in all types of industries and work scopes.

BUSS 210 Business Law 3(3, 0, 0)

Prerequisite: MNGT 110

The main objective of the course is to help business students understand Saudi and Gulf legal environment and the legal aspect of common business activities and the formation and functioning of commercial companies along with the related ethical principles. Topics covered include laws pertaining to business people and employment, labor laws, business associations, the business firm, breach of contract, commercial papers and letters of credit.

BUSS 330 Managerial Economics 3(3, 0, 0)

Prerequisites: Third year standing, ECON 211

The main objective of this course is to equip students with the necessary economic theory and techniques and the ability to apply them in order to inform and enhance managerial decision making. Topics covered include: optimization techniques, demand theory and estimation, forecasting and measurement, theory of production and estimation, cost theory and estimation, pricing and output determination under different market structures, game theory, and pricing in practice.

BUSS 346 Internship/Practicum 1(1, 0, 0)

Prerequisites: Senior Standing

A summer period of guided work experience under faculty supervision by a mentor, and corporate guidance by a preceptor is designed to acquaint students with the ground realities and help them acquire core values and basic skills necessary for an understanding of the field operations of a firm.

BUSS 400 Developing Business Plan 2(2, 0, 0)

Prerequisites: Senior standing

This course focuses on starting your own business from inception to IPO, passing through the stages of feasibility study, VC financing, launching, and operating.

BUSS 440 Strategic Management 3(3, 0, 0)

Prerequisites: Senior standing

This capstone course exposes seniors to the strategic management process of local, regional, and multinational corporations. Emphasis is placed on identifying the tools needed for strategic analysis of the firm and the industry, and on comprehending the key strategic issues that managers face in managing corporations.

BUSS 445 Business Research Methods 3(3, 0, 0)

Pre-requisites: Senior standing, BUSS 110, MNGT 110

The course provides students with an introduction to the main theories and practices in the field of business research. Topics include: business research process; research design and strategies; methods of qualitative and quantitative research; design of experiments including sampling, survey design, data collection, basic data analysis, and research reporting and evaluation.

BUSS 451 Graduation Project 3(3, 0, 0)

Prerequisites: Senior standing

The project requires, among other things, that the student works on a problem faced by one of the local or regional businesses, and recommend a set of possible solutions under the supervision of a faculty mentor in the particular area. The results of the project are normally presented in a meeting in the presence of representatives from the business subject to the consulting assignment.

BUSS 460 Graduation Project 3(3, 0, 0)

Prerequisites: Senior standing

The project requires, among other things, that the student works on a problem faced by one of the local or regional businesses, and recommend a set of possible solutions under the supervision of a faculty mentor in the particular area. The results of the project are normally presented in a meeting in the presence of representatives from the business subject to the consulting assignment.

BUSS 490 Special Topics in Business 3(3, 0, 0)

Pre-requisite: Senior standing

This is a general course intended to reinforce the student‘s knowledge in a specific functional area of Business Administration usually not offered in one of the regular core or other elective courses. Through a combination of lectures, case studies and independent reading, the course aims to expand the students’ knowledge of the related concepts and applications.

DCSN 200 Managerial Decision Making: Models and Techniques 3(3, 0, 0)

Prerequisites: MNGT 110

This course addresses the tools and techniques of modern managerial decision making. It addresses formulation of theories and models that can be used to analyse complex problem taken from various functional areas of management. The main goal is to understand how business decisions are reached, what tradeoffs is made and how outcomes depend on the underlying data.

DCSN 305 Operations Management 3(3, 0, 0)

Prerequisites: Third year standing, BUSS 110

This course offers an overview of the issues involved in how operations managers make strategic decisions to operate a production or service system in order to give the firm a sustainable competitive advantage in a global marketplace. Specific topics covered include operations strategy framework; project management; product design and process management; total quality management; capacity planning; supply chain design; and control of operations.

DCSN 415 Advanced Managerial Decision Making Models 3(3, 0, 0)

Prerequisites: Senior standing, DCSN 200

This course introduces students to concepts, processes and practices of decision making at both individual and group level. Students will understand the essential definition of DSS, Business intelligence and their components and structure.

MATH 204 Introduction for Business Maths 3(3, 0, 0)

Prerequisites: MATH 100, STAT 100

Introduction to Business Mathematics provides students with the fundamental mathematical skills necessary for success in various business contexts. This course covers essential mathematical concepts and techniques tailored to meet the specific needs of students pursuing careers in business administration, finance, accounting, economics, and related fields.

Economics Courses:

ECON 211 Principles of Microeconomics 3(3, 0, 0)

This is an introductory course which presents the general Principles of microeconomics. Topics include supply and demand, market equilibrium, consumer theory, market equilibrium, production, market structures (monopoly and oligopoly), and welfare economics and income distribution.

ECON 212 Principles of Macroeconomics 3(3, 0, 0)

Prerequisites: ECON 211

This course deals with principles of economics that apply to an economy as a whole. It includes elements on the determinants of the general price level and national output, consumption, investment, inflation and unemployment. The course introduces the monetary and fiscal policies to promote long-term economic growth. It also provides a basic understanding of the foreign exchange markets, balance of payments and the effects of currency changes on a country's imports and exports.

Entrepreneurship Courses:

ENTM 420 Entrepreneurship and Small Business Management 3(3, 0, 0)

Prerequisites: BUSS 400

This course covers the management, organization, and operational issues of small business enterprises. This course emphasizes the identification and resolution of managerial problems from the perspective of small business focusing mainly on marketing, finance and HR areas.

Finance Courses:

FINA 110 Business Finance 3(3, 0, 0)

This course teaches the tools that determine and analyze the major decisions a financial manager has to make, including identification of the firm's goals, time value of money, use of discount cash flow models, capital budgeting under certainty, capital structure as it relates to cost of capital, dividend policy, and ethics in finance.

FINA 215 Financial Markets and Institutions 3(3, 0, 0)

Prerequisites: FINA 110

This course covers analysis of existing financial systems, money and capital markets, banks and non-bank financial intermediaries, term structure of interest rates, and securities markets including the stock and bond exchanges. It introduces the role of risk management in the financial institutions industry. Both quantitative and qualitative measures of risks are emphasized.

FINA 310 Islamic Finance and Management 3(3, 0, 0)

Prerequisites: Third year standing, FINA 110

This course introduces financial institutions, transactions and instruments that comply with Islamic principles. The course focuses on Shariah compliant transactions and instruments such as financial partnerships and profit sharing, asset-backed equity and debt, and Shariah compliant insurance. Further topics include the development of new instruments and practices to offer a broader range of Islamic financial solutions, practical management uses and implications of Islamic finance.

FINA 311 Corporate Finance 3(3, 0, 0)

Prerequisites: Third year standing, FINA 110

This course is designed to give students a strong foundation in the core concepts and principles of corporate finance. Students will learn how to use financial tools and analysis to make informed decisions about investment, financing, and dividend policy. The course will also cover ethical considerations in corporate finance.

FINA 312 Ethics in Finance 3(3, 0, 0)

Prerequisites: Third year standing

This course is designed to help students develop the ethical reasoning and decision-making skills they need to navigate the complex ethical challenges of the financial industry. Students will learn about different ethical theories and principles. They will also learn how to identify and manage conflicts of interest, avoid insider trading, and prevent fraud and financial crime. This course will give them the knowledge and skills needed to make ethical decisions in their career and uphold the highest standards of professional conduct.

FINA 314 Intermediate Financial Management 3(3, 0, 0)

Prerequisites: Third year standing, FINA 110

The course will address important financial management topics, including the methods of analyzing capital budgeting decisions and the unique problems they pose, long-term capital structure and dividend policy decisions, corporate financial analysis and forecasting, working capital management, and additional special topics in financial management.

FINA 316 Principles of Insurance 3(3, 0, 0)

Prerequisites: Third year standing, FINA 110

This course is designed to provide an in depth study of the different types of non-speculative risks faced by individuals and businesses. The first section of the course will provide a clear understanding of the definitions of risk and insurance, as well as examine the various principles of insurance from an economic and regulatory perspective. The second section of the course will provide an in depth study of the property and casualty insurance field and provide a review of the various insurance contracts used therein.

FINA 351 Advance Insurance 3(3, 0, 0)

Prerequisites: FINA 316

This course is designed to give students a strong foundation in the advanced concepts and principles of insurance. Students will learn how to underwrite complex risks, design reinsurance programs, and structure alternative risk transfer mechanisms. The course will also cover the latest developments in insurance regulation and compliance.

FINA 353 Advance Banking 3(3, 0, 0)

Prerequisites: FINA 215

This course is designed to give students a strong foundation in the advanced concepts and principles of banking. Students will learn about the different types of banks, their products and services, and how they manage risk and comply with regulations. The course will also cover the latest trends and developments in banking, such as digital banking and fintech.

FINA 370 Portfolio Theory and Investment Analysis 3(3, 0, 0)

Prerequisites: FINA 215

Investments can be thought to be composed of two branches: security analysis and portfolio management. We will begin by looking at the financial markets and the concept of risk/return; then we will examine modern portfolio theory, including market efficiency and behavioral finance.

FINA 390 Valuation Methods 3(3, 0, 0)

Prerequisites: FINA 215

This course is designed to give students a strong foundation in the core concepts and principles of valuation. Students will learn how to use different valuation methods to estimate the intrinsic value of a financial asset. The course will also cover how to apply valuation methods in real-world financial settings, such as investment banking and mergers and acquisitions.

FINA 410 Financial Planning and Control 3(3, 0, 0)

Prerequisites: Senior standing, FINA 311

This course focuses on topics such as the financial planner's role and environment, cash flow budgeting, consumer credit, controlling and planning labor and overhead costs, expense and capital expenditure planning, debt management, insurance, taxation and financial planning. The course also covers aspects of personal financial planning, including retirement planning, estate planning and wills, personal bankruptcy and insolvency, and preparation of financial plans.

FINA 411 Financial Engineering 3(3, 0, 0)

Prerequisites: Senior standing, FINA 215

The objective of this module is to study the wide array of tools and techniques that have evolved to manage and transfer risks. We start by reviewing the building blocks of risk management strategies, i.e. forward contracts, futures, swaps and options. We will study the rationale behind their usage, and how they can be combined to replicate more complex financial contracts and achieve the desired risk management goals.

FINA 412 Financial Derivatives 3(3, 0, 0)

Prerequisites: Senior standing, FINA 215

The purpose of the course is to provide the student with the necessary skills to value and to employ options, option-like-instruments and futures. In order to provide a useful treatment of these topics in an environment that is changing rapidly, it is necessary to stress fundamentals and to explore topics at a technical level.

FINA 420 Investment Management 3(3, 0, 0)

Prerequisites: Senior standing, FINA 215

A study of the operations of securities markets, investment policies, valuation of individual securities, and techniques of investing in securities. This course also introduces students to analysis of investment information, evaluation of risks and returns, and principles of portfolio selection in investment decisions.

FINA 421 Financial Data Analysis 3(3, 0, 0)

Prerequisites: Senior standing, FINA 110, BUSS 110

A study of the operations of securities markets, investment policies, valuation of individual securities, and techniques of investing in securities. This course also introduces students to analysis of investment information, evaluation of risks and returns, and principles of portfolio selection in investment decisions.

FINA 423 Fixed Income Securities Valuation 3(3, 0, 0)

Prerequisites: FINA 390

This course is designed to give students a strong foundation in the core concepts and principles of fixed income securities valuation. Students will learn how to calculate the present value of future cash flows, price bonds, and analyze the term structure of interest rates. The course will also cover the different types of fixed income securities, the risks associated with them, and how to value them.

FINA 425 Commercial Bank Management 3(3, 0, 0)

Prerequisites: Senior standing, FINA 215

This course focuses on the management aspects of commercial banks, financial analysis of bank statements, liquidity management, assets and liability management, profitability, capital adequacy, credit analysis, trade finance, and banking regulations.

FINA 427 Real Estate Finance and Investment 3(3, 0, 0)

Prerequisites: Senior standing, FINA 110

This course is designed to give students a strong foundation in the core concepts and principles of real estate finance and investment. Students will learn how to analyze real estate markets, evaluate real estate investment opportunities, and structure real estate transactions. The course will also cover the different types of real estate debt and equity financing, as well as the role of REITs in the real estate market.

FINA 430 International Financial Management 3(3, 0, 0)

Prerequisites: FINA 311

This course examines international regulatory and environment differences, access to money and capital markets, use of derivatives to hedge exchange rate risk, exposure to different types of risks, and international diversification handled by multinational corporations.

FINA 450 Risk Management in Financial Institutions 3(3, 0, 0)

Prerequisites: Senior standing, FINA 215

This course defines the role of risk management in the financial industry. It focuses on the qualitative and quantitative measures of risk, and considers the management of various risks faced by investors: interest rate risk, foreign exchange rate risk, credit risk, operational risk. It also discusses portfolio analysis and the role of asset and liability management and risk control processes.

FINA 452 Financial Report Analysis 3(3, 0, 0)

Prerequisites: Senior standing, FINA 110

This course is designed to give students a strong foundation in the core concepts and principles of financial statements analysis. Students will learn how to read and understand financial statements, identify key financial ratios, and use financial analysis to assess a company's financial performance, liquidity, profitability, and risk. The course will also cover how to use financial analysis to forecast future financial performance and value a company.

FINA 459 International Banking 3(3, 0, 0)

Prerequisites: FINA 425

This course is designed to give students a strong foundation in the core concepts and principles of international banking. Students will learn about the different components of the international financial system, how foreign exchange markets operate, and how banks finance international trade and investment. The course will also cover how to assess country risk and how international banking is regulated.

FINA 491 Applied Finance Lab 2 (0, 2, 0)

Prerequisites: Senior standing

This course is designed to help students bridge the gap between theory and practice in finance. Students will learn how to use real-world financial data and software tools to make informed financial decisions. The course will also cover the different principles and strategies of portfolio management.

Human Resources Management Courses:

HRM 120 Principles of HR Management 3(3,0,0)

This course will provide students with an appreciation of current theoretical, sociological and practitioner-based issue and developments in the technical aspects of human resource management. The effects of sociological, legal, economic, ethical, political, strategic and environmental changes, issues and developments on human resource management processes, practices, programs and policies

HRM 320 Management & Organization 3(3,0,0)

Prerequisites: MNGT 110

This course introduces students to the fundamentals of management that shape individual, group and organizational performance in business. It further introduces students to contemporary management and the four management functions of planning, organizing, leading and controlling in the international and local contexts; the influence of External and Internal environments on organizations including diversity and Aboriginal and other cultural perspectives; the nature of motivation and decision making, managing risks, and managing organizational change.

HRM 325 Recruitment & Selection 3(3,0,0)

Prerequisites: Third year standing, HRM 120

This course will provide students with an understanding of the current theory, processes and practices of recruitment and selection in organizations, equipping them with a working knowledge of the recruitment and selection literature and providing opportunities to develop and practice relevant recruitment and selection skills. Social, legal, and administrative issues associated with the recruitment, selection and induction of individuals by organizations; workforce planning, job analysis, channels and methods of recruitment, resume analysis, shortlisting, selection processes and onboarding practices; theory, research, and organizational practices.

HRM 330 Communication Management in Practice 2(2,0,0)

Prerequisites: HRM 120, BUSS 200

This course focuses on communication as a management and leadership tool, and emphasizes communications with a variety of stakeholders within an organization: team members, superiors, direct reports, as well as management of external stakeholders such as clients. Topics include communication theories and communication strategies for leading based on communication skills and strengths, managing conflict, and addressing ethics and destructive leadership communication practices.

HRM 335 International Business Environment 3(3,0,0)

Prerequisites: MNGT 110, HRM 120

The course "International Business Environment" provides a comprehensive understanding of the multifaceted landscape in which global businesses operate. With globalization continuing to reshape economies and markets worldwide, navigating the international business environment requires a nuanced understanding of various factors including economic, political, legal, socio-cultural, and technological dimensions..

HRM 346 Internship in HRM 1(1,0,0)

Prerequisites: Senior Standing

A summer period of guided work experience under faculty supervision by a mentor, and corporate guidance by a preceptor is designed to acquaint students with the ground realities and help them acquire core values and basic skills necessary for an understanding of the human resource aspects and operations of a firm.

HRM 370 Training & Development 3(3,0,0)

Prerequisites: HRM 120

This course focuses on developing students' understanding of the organizational aspects and strategic context of training and development and apply theories of learning, motivation and instructional design to training and development of people. Learning in the changing workplace; the training professional's role; learning organizations and knowledge management; strategic training; analysis and assessment of training needs; theories of adult learning and motivation; design and delivery of training programs; managing a training session; measuring and evaluating outcomes; e-learning and implications of learning and performance support in the workplace.

HRM 410 Performance & Compensation Management 3(3,0,0)

Prerequisites: Senior standing

This course covers two important organizational human resource management activities: performance management and compensation management. Students will learn how organizations develop effective performance management and compensation management systems to achieve organizational goals. This course overviews the techniques organizations use when managing employee performance and compensation. It particularly emphasizes on acquisition knowledge and skills necessary for designing performance and compensation management systems. It also addresses recent theory and research relevant to performance and compensation management decisions.

HRM 415 Negotiation & Dispute Resolution 3(3,0,0)

Prerequisites: BUSS 210, LSCM 220

This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal and group settings. Emphasis is placed on understanding influence and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises.

HRM 425 Managing the Employment Relationship 3(3,0,0)

Prerequisites: Senior standing

This course Presents the theoretical explanations of patterns, practices and institutions of industrial relations; evolution of relevant institutions; management strategy; employee organization, strategy and behavior; institutions and practices of workplace, regulation; arbitration, enterprise bargaining, individual employment contracts, and the mechanisms used to create enforceable industrial instruments; historical, economic, political and social context of industrial relations.

HRM 430 Saudi Labor Law 3(3,0,0)

Prerequisites: MNGT 110, BUSS 210

Students examine the different legislations that affect employees, employers and employment practices in the Kingdom of Saudi Arabia.

HRM 440 Occupational Health & Safety 3(3,0,0)

Prerequisites: HRM 430

This course will identify appropriate procedures to minimize or eliminate injuries and illness in the workplace, incorporate job safety analysis (JSA) and appropriate training, and name elements of an effective safety culture.

HRM 445 HR Analytics (3,0,0)

Prerequisite: Senior standing, HRM 120, BUSS 110

This course is designed to provide students with a conceptual framework addressing the strategic importance of managing change and organization development (OD) in various agencies, human

service organizations, community organizations and other settings. Uncertainty, complexity and rapidly changing organizational environments create the necessity for organizations to respond to and effectively deal with turbulence and instability.

HRM 450 Transition to Employment (3,0,0)

Prerequisites: HRM 120

The Transition to Employment course is designed to equip individuals with the essential skills, knowledge, and strategies necessary to navigate the transition from education or training to the professional workplace. Whether you're a recent graduate, returning to work after an absence, or seeking to enhance your employability, this course provides a comprehensive framework to facilitate a smooth and successful transition into the workforce.

HRM 455 Planning & Implementing organizational change (3,0,0)

Prerequisites: Senior standing,

The course "Planning & Implementing Organizational Change" is designed to equip students with the knowledge, skills, and tools necessary to lead successful organizational transformations in today's dynamic business landscape. In an era marked by rapid technological advancements, globalization, and evolving market demands, the ability to effectively plan and execute change initiatives is paramount for organizational success and resilience.

HRM 460 Fundamentals of Innovation & Entrepreneurship 3(3,0,0)

Prerequisites: Senior Standing

The course helps students examine the complexities of entrepreneurial success. Topics highlighted in the class include: deciding on an approach, scrutinizing and monitoring opportunities, networking informally, locating/organizing external resources, managing risk, designing and developing marketing plans, increasing sales, securing investors, managing debt and enterprise capital, using vertical and horizontal integration techniques, developing a leadership team and an innovative culture, monitoring technology cycles, and structuring/managing change, ethics, and exit strategies

HRM 465 Organizational Leadership (3,0,0)

Prerequisites: MNGT215

The Organizational Leadership course is designed to cultivate the essential skills and competencies required for effective leadership within diverse organizational contexts. Whether you're an aspiring leader, a mid-level manager, or a seasoned executive, this course provides a comprehensive framework to enhance your leadership capabilities and drive positive organizational change.

HRM 471 HRM Graduation Project 3(3,0,0)

Prerequisites: Senior Standing

This course is intended to complement theory and to provide an in-depth, hands-on experience in all aspects of a real business project. Students will work in teams as consultants on projects of interest to industry and will be involved in specifying the problem and its solution, designing and analyzing the solution, and developing recommended solutions. The deliverables will include reports that document these steps as well as a final project report, including the challenges faced by the team. The course provides students with a unique opportunity to work in a team environment, interact with industry leaders and workers and gain industry specific knowledge. Students will learn how to work on a consulting engagement, how to collect the necessary data for analysis and assessment and how to use the skills and knowledge gained to solve real world problems in the area of human resources management.

Logistics & Supply Chain Management Courses:

LSCM 220 Introduction to Logistics & Supply Chain 3(3,0,0)

This course presents an overview of all logistic activities and supply chain management including purchasing, procuring, storing, shipping, insuring and inventorying goods & service with proper strategic planning to guarantee sustainability of businesses and operations.

LSCM 315 Purchasing & Procurement Management 3(3,0,0)

Prerequisites: Third year standing, LSCM 220

This course explains the purchasing and sourcing management concepts with focus on selecting, building, and managing supplier relationships. The course also covers the contract development and its management as well as building the necessary skills for effective negotiation.

LSCM 320 Supply Chain Strategies 3(3,0,0)

Prerequisites: Third year standing, LSCM 220

This course examines key players and challenges within a supply chain firm in terms of facility types, inventory and transportation options and the role of information in managing supply chains effectively and efficiently. Students will examine and learn the objectives of different players in supply chains, integration/coordination of the players, and the operations and tradeoffs in service supply chains (i.e., air/sea lines, healthcare, hotels and restaurants).

LSCM 325 Product and Brand Management 3(3,0,0)

Prerequisites: Third year standing, MKTG 210, LSCM 220

The purpose of the Product and Brand Management course is to give the students a fundamental understanding of how to build, measure, and manage a brand. Course activities include readings from Keller's 'Strategic Brand Management' textbook, discussions of these readings, and cases from Keller's 'Best Practice Cases in Branding' that will allow the students to apply the theories and strategies learned.

LSCM 330 International Marketing 3(3,0,0)

Prerequisites: Third year standing, MKTG 210

This course will equip students with the tools and terminology to explore and understand marketing practices in a global environment. The students will learn the scope and challenge of international marketing, the dynamic environment of international trade, the culture, political, legal, and business systems of global markets, the global market opportunities and finally, the ways to develop global marketing strategies.

LSCM 346 Internship in Logistics & Supply Chain Management 1(1,0,0)

Prerequisites: Senior Standing

A summer period of guided work experience under faculty supervision by a mentor, and corporate guidance by a preceptor is designed to acquaint students with the ground realities and help them acquire core values and basic skills necessary for an understanding of the different aspects and operations of a firm.

LSCM 380 Communication Management in Practice 2(2,0,0)

Prerequisites: LSCM 220, BUSS 200

This course focuses on communication as a management and leadership tool, and emphasizes communications with a variety of stakeholders within an organization: team members, superiors, direct reports, as well as management of external stakeholders such as clients. Topics include communication theories and communication strategies for leading based on communication skills and strengths, managing conflict, and addressing ethics and destructive leadership communication practices.

LSCM 390 Technology in Logistics & Inventory Management 3(3,0,0)

Prerequisites: LSCM 220, INFO 200

This course focuses on logistics concepts and systems, related components, and managing inventory in supply chain systems. This course also covers the planning, designing, and techniques for managing the distribution of products and services.

LSCM 395 Distribution & Warehouse Management 3(3,0,0)

Prerequisites: Third year standing, LSCM 220

This course will provide students with an in-depth knowledge of the complex relationship between physical distribution and logistical functionality when attempting to enhance supply chain operations. Importance will be placed on the following four key elements of physical distribution: 1) facility location (warehousing); 2) distribution marketing practices; 3) materials management (inventory control and management); and 4) transportation. The selection of marketing techniques, freight routing plans, and transportation methods that influence physical distribution practices in and between organizations will be analyzed. The Saudi context of logistics will be a major focus in the course.

LSCM 400 Advanced Management Information System 3(3,0,0)

Prerequisites: Senior standing, INFO 200

This course will provide students with advanced study of file processing, databases and database management systems within organizations, logical models (hierarchical, network, relational, and object-oriented), query, optimization, recovery, integrity, concurrency, security, distributed databases and client-server architecture, database machines, knowledge-based and text-based systems, and data mining and warehousing.

LSCM 435 Negotiation & Dispute Resolution 3(3,0,0)

Prerequisites: BUSS 210, LSCM 220

This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal and group settings. Emphasis is placed on understanding influence and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises.

LSCM 440 Quality & Process Management 3(3,0,0)

Prerequisites: Senior Standing, DCSN 305

This course examines Six Sigma concepts and theory of quality control in manufacturing and service operations, analysis of product design and process capability, and statistical process control. Students will develop a broad understanding of Lean and Six Sigma principles and practice in order to acquire knowledge about such initiatives in manufacturing and service operations.

LSCM 450 Logistics Marketing Management 3(3,0,0)

Prerequisites: Senior Standing, MKTG 210, LSCM 220

This course examines on the organizational, management and technology issues related to the sales and marketing function. It covers the business approaches that support sales and marketing plans as well as information and knowledge management considerations. It also explores the knowledge linkages between the sales and marketing function and the supply chain functions.

LSCM 460 Integrated Marketing Communication 3(3,0,0)

Prerequisites: Senior Standing

This course provides a comprehensive exploration of the principles, processes, and practices essential for thriving in the dynamic landscape of innovation-driven entrepreneurship. Through a combination of theoretical frameworks, case studies, practical exercises, and real-world examples,

students will develop a deep understanding of the fundamental concepts and strategies that underpin successful innovation and entrepreneurship ventures.

LSCM 470 Distribution Management 3(3,0,0)

Prerequisites: Senior Standing, LSCM220

This is an introductory course in (distribution) logistics, which deals with the management of the flow of goods (inventory), services, and related information among members in the supply chain (i.e., suppliers, manufacturers, distributors, retailers, logistics service providers and the end customer).

LSCM 475 Supply Chain Analysis 3(3,0,0)

Prerequisites: Senior Standing, LSCM 220, BUSS 110

The course will explore the major elements of the supply chain. The student will be exposed to leading edge thinking on supply chain strategy as well as practical tools and methods for its implementation.

LSCM 480 Logistics and Transportation 3(3,0,0)

Prerequisites: Senior standing MKTG 210, LSCM 220

Distribution Management is the introductory undergraduate logistics and supply chain management course in the business curriculum. It is designed to give students a managerial knowledge of how logistics supports marketing-distribution, procurement and manufacturing.

LSCM 485 Logistics Using Cloud Computing 3(3,0,0)

Prerequisites: Senior Standing, INFO 200

In today's rapidly evolving business landscape, efficient logistics management is crucial for success. This course introduces students to the intersection of logistics management and cloud computing technologies, offering a comprehensive understanding of how cloud computing can revolutionize supply chain operations.

LSCM 491 Graduation Project 3(3,0,0)

Prerequisites: Senior standing

This course is intended to complement theory and to provide an in-depth, hands-on experience in all aspects of a real business project. Students will work in teams as consultants on projects of interest to industry and will be involved in specifying the problem and its solution, designing and analyzing the solution, and developing recommended solutions. The deliverables will include reports that document these steps as well as a final project report, including the challenges faced by the team. The course provides students with a unique opportunity to work in a team environment, interact with industry leaders and gain industry specific knowledge. Students will learn how to work on a consulting engagement, how to collect the necessary data for analysis and assessment and how to use the skills and knowledge gained to solve real world problems in the area of supply chain management.

Management Courses:

MNGT 110 Principles of Management 3(3, 0, 0)

A course that focuses on the modern corporate entity: rationale, structure, processes and functions; internal dynamics of supervision and leadership, functions of management, performance and change management, systems dynamics, and interface with the environment.

MNGT 215 Organizational Behavior 3(3, 0, 0)

Prerequisites: MNGT 110

This course deals with corporate behavioral dynamics at the individual and group levels, managerial communication, team building, leadership, motivation, and conflict resolution.

MNGT 328b Business Ethics 3(3, 0, 0)

Prerequisite: Third year standing, MNGT 110

This course covers the topics of instrumental expediency and moral imperatives, ethical dimensions of corporate decision making, intra- and interpersonal ethical conflicts, and limits of individual and corporate responsibility.

MNGT 420 Human Resource Management 3(3, 0, 0)

Prerequisites: Senior standing, MNGT 120

A course that deals with understanding and managing human capital as a major strategic asset, macro and micro manpower planning, skill surveying, management learning, de-learning and relearning, results-driven performance in the age of virtual organizations and telecommuting, and knowledge workers in a rapidly changing corporate context within a global knowledge economy.

MNGT 430 International Business and Management 3(3, 0, 0)

Prerequisites: senior standing, MNGT 110

This course examines substantive and stylistic challenges for senior and middle management in international cross continent corporations and conglomerates, standardization and diffusion of authority and operations, mobility and self-reinvention, and integration and differentiation.

MNGT 440 Total Quality Management 3(3, 0, 0)

Prerequisite: Senior standing, BUSS 110

This course covers an advanced analytical account of TQM as a modern management philosophy and a program for reaching customer satisfaction. It includes a large set of practical applications at different firm levels in sustaining the relationship with customers.

MNGT 460 Change Management 3(3, 0, 0)

Prerequisite: BUSS 400

This course discusses a central paradigm in modern management theory and practice. It reviews various organizational forces that enable and resist change. It includes the change processes at the individual, group, and organizational levels and introduces theories and approaches related to managing changes.

Management Information Systems Courses:

INFO 200 Management Information System 3(3, 0, 0)

Prerequisites: MNGT 110, CSC 100

This course introduces the IT applications in businesses that raise productivity, create customer value and sustain competitive advantage. The survey of the underlying information technology and information systems (IT/IS) show how business processes and transactions are supported.

INFO 400 E-Commerce (EC) Strategies and Applications 3(3, 0, 0)

Prerequisites: Senior standing, INFO 200

This course explores strategies and applications in the context of planning an EC initiative or startup. Business models and competitive strategies are used as the framework: (a) for understanding how EC is different from and similar to other businesses; and (b) how to create business value from the combined use of internet technology and the underlying IS/IT. Students/teams outline key items of an EC business plan; write high-level requirements for an E-Commerce initiative/startup; and study cases.

Marketing Courses:

MKTG 210 Principles of Marketing 3(3, 0, 0)

This course presents an overview of marketing activities including marketing inputs in strategic planning, global marketing, marketing research, analysis of buyer behavior, market segmentation and positioning, and development of the marketing mix elements.

MKTG 315 Marketing Channels 3(3, 0, 0)

Prerequisites: MKTG 210

This course provide overview of a marketing channel where is viewed as an inter-organizational system of companies involved with the task of making goods, services, and experiences available to end-users by enhancing their time, place, possession and solution utilities. The focus is on how upstream organizations can create and drive innovation across the entire business system they rely on to get to market.

MKTG 320 Competitive Marketing Strategies 3(3, 0, 0)

Prerequisites: MKTG 210

This course provides the insight and skills necessary to formulate and implement sound marketing strategies. The process of strategy formulation is divided into three stages; strategic analysis, strategic decision-making, and implementation of strategies. Specific topics include strategic planning, consumer decision-making, life cycle segmentation, product positioning, market response, competitive behavior, new product development, product line management, and the marketing plan.

MKTG 325 Product and Brand Management 3(3, 0, 0)

Prerequisites: Third year standing, MKTG 210, LSCM 220

The purpose of the Product and Brand Management course is to give the students a fundamental understanding of how to build, measure, and manage a brand. Course activities include readings from Keller's 'Strategic Brand Management' textbook, discussions of these readings, and cases from Keller's 'Best Practice Cases in Branding' that will allow the students to apply the theories and strategies learned.

MKTG 330 International Marketing 3(3, 0, 0)

Prerequisites: Third year standing, MKTG 210

This course will equip students with the tools and terminology to explore and understand marketing practices in a global environment. The students will learn the scope and challenge of international marketing, the dynamic environment of international trade, the culture, political, legal, and business systems of global markets, the global market opportunities and finally, the ways to develop global marketing strategies.

MKTG 390 Online Marketing 3(3, 0, 0)

Prerequisites: Third year standing, MKTG 210

The course examines digital marketing strategy, implementation and executioner considerations for BtoB and BtoC brands and provides a detailed understanding of all digital channels and platforms. Students will complete the course with a comprehensive knowledge of and experience with how to develop an integrated digital marketing strategy, from formulation to implementation.

MKTG 420 Marketing Research 3(3, 0, 0)

Prerequisites: Senior standing, BUSS 110, MKTG 210

A course that provides thorough coverage of various marketing research tools along with an applied orientation, including a systematic analysis of the steps comprising the marketing research process, starting with research problem definition and terminating with data collection, analysis, and presentation.

MKTG 430 Professional Selling and Sales Management 3(3, 0, 0)

Prerequisites: Senior standing, MKTG 210

This course examines sales management functions and strategies, developing the selling function, sales goals and structure, building a sales program, and leading and motivating the sales force. This course also examines the opportunities and problems faced by marketers in contemporary retail formats. The principle issues involved in retailing are explored, including store location and layout, merchandise planning, buying and selling, category management, and coordination of store activities. Overall the course allows students to develop appropriate skills and knowledge for effective and efficient decision making in the contemporary retail environment.

MKTG 435 Public Relations 3(3, 0, 0)

Prerequisites: Senior standing, MKTG 210

This course focuses on the communication between an individual or organization and the public to promote stakeholder acceptance and approval. Students explore traditional and emerging components of the public relations process through mass media, as well as the needs of different types of businesses, such as corporations, non-profit organizations, and government agencies.

MKTG 440 Consumer Behavior 3(3, 0, 0)

Prerequisites: Senior standing, MKTG 210

This course introduces behavioral science perspective to analyze and predict consumer behavior by focusing on the decision-making processes followed by consumers in different situations.

MKTG 450 Logistics Marketing Management 3(3, 0, 0)

Prerequisites: Senior standing, MKTG 210

This course examines on the organizational, management and technology issues related to the sales and marketing function. It covers the business approaches that support sales and marketing plans as well as information and knowledge management considerations. It also explores the knowledge linkages between the sales and marketing function and the supply chain functions.

MKTG 460 Integrated Marketing Communication 3(3, 0, 0)

Prerequisites: Senior standing, MKTG 210, BUSS 200

Students examine the elements of integrated marketing communications including advertising, direct marketing, social media, personal branding, personal selling, sales promotion, and public relations/publicity, focusing on the blending of the elements into a total enterprise marketing communications program.

MKTG 470 Distribution Management 3(3, 0, 0)

Prerequisites: Senior standing, MKTG 210

This is an introductory course in (distribution) logistics, which deals with the management of the flow of goods (inventory), services, and related information among members in the supply chain (i.e., suppliers, manufacturers, distributors, retailers, logistics service providers and the end customer).

MKTG 480 Logistics and Transportation 3(3, 0, 0)

Prerequisites: Senior standing, MKTG 210, LSCM 220

Distribution Management is the introductory undergraduate logistics and supply chain management course in the business curriculum. It is designed to give students a managerial knowledge of how logistics supports marketing-distribution, procurement and manufacturing.

BRIDGING & EVENING PROGRAM IN BUSINESS ADMINISTRATION

The bridging program allows students with a two-year technical diploma to continue their studies to earn a Bachelor of Science in Business Administration. The program gives credit to up to 40% of equivalent courses previously taken. Placement exams are administered at the beginning of studies to offer compensatory coursework and build a solid foundation to participating students.

Moreover, the department offers courses at night to allow employees and those who are busy during working hours to pursue their study.

Admission Requirements

Admission of Diploma graduates to the Bachelor Program at the College of Business & Management is based on the General University admission requirements. The applicant must, however, be a graduate of a KSA-accredited academic organization and must have passed the official technical exam administered by the relevant governmental authority.

Program Requirements

In order to graduate with a bachelor's degree in any of the fields offered by the College of Business & Management, new students are expected to complete a total of 138 credit hours by the end of their fourth year of academic courses. Diploma graduates are entitled to get exemption from up to 40% of the required credits, depending on their entry qualifications.

COLLEGE OF COMPUTING

COLLEGE OF COMPUTING

Officers

Acting Dean: Mohammad A. Mezher

Professor: Samir Bataineh

Associate Professors: Nazar El-Fadil (CEN Chairperson), Mohammad Hujooj, Motasem Jarajrah

Assistant Professors: Osamah Ghaleb (CS Chairperson), Mohammad Mezher, Mohammed Shady

Lecturers: Hiba AbdelHakim, Abdulalla Albalawi, Fedaa Farhat, Raghad Alsehli

Overview

The College of Computing (CC), the first to be established at FBSU in 2005, offers programs in the two major venues of informatics: Computer Science and Computer Engineering. The CC is structured around the two departments:

1. The Computer Science Department offers two programs of 4 years duration:
   a) A Bachelor of Computer Science with one track:
      - Computer Science in Cybersecurity
   b) A Bachelor of Science in Information Technology with two tracks:
      - An Artificial Intelligence and Machine Learning track
      - A Data Science and Analytics track
2. The Computer Engineering Department offers one program of 5 years duration:
   c) Bachelor of Sciences in Computer Engineering.

Through its intensive undergraduate programs that emphasize the actual implementation of theories and real-world environment and problems, the CC graduates experts in all walks of Computing.

Vision

To become a prominent computing college in the Tabuk region and the Kingdom offering undergraduate and graduate programs capable of equipping students with professional computing aptitudes, advanced research skills, and high ethics.

Mission

The College of Computing at Fahad Bin Sultan University is committed to excellence in computing education, aligning with national and international standards. The college integrates advanced technology and diverse pedagogical methods to enhance scientific research and creative problem-solving. The college aims to develop graduates proficient in computing and dedicated to community service and global betterment. The college strives to foster continuous learning and leadership in the students, preparing them to excel in a dynamic digital landscape. The college focuses on efficiently utilizing and diversifying educational resources to contribute to the community through technology.

Core Values

- Reinforcement of national identity and cultural authenticity
- The uncompromising pursuit of quality educational services to students in ways that cognitive skills, cultivate personality and help the development of character
- Integrity and adherence to ethical behavior in all ways at all levels
- Life-long learning and investment in self-renewal
- Critical thinking and board exposure to major global currents
- Community spirit and commitment to social service

Objectives

- Provide students with basic foundations in computing to enable them to identify, formulate, and solve computing problems,
- Equip students with basic principles in software and hardware and the necessary tools to be able to implement computing solutions,
- Enable students to communicate effectively, think critically, and be life-long learners,
- Instill in students an appreciation of the ethical, social and professional issues in an increasingly diverse and technological society, and
- Prepare students to undertake higher studies in computing or related fields.

Bachelor Degrees Offered

The Computing College grants the following degrees

- Bachelor of Science Computer Science (BSC)
- Bachelor of Science in Information Technology (BIT)
- Bachelor of Science in Computer Engineering (BCEN)

The bachelor's degree programs allow eligible students to develop enhanced knowledge in these areas through a balanced curriculum of required/elective intermediate and advanced courses in specific computing concentrations.

The courses offered in the bachelor programs provide students with more in-depth knowledge in their chosen track area.

Admission Requirements

Admission of students to the BSC, BIT and BCEN programs at the College of Computing is based on the General University admission requirements in addition to specific criteria set by the College of Computing. All direct admissions are decided by the University Admissions Committee.

University Requirements

To complete a bachelor's degree program in the College of Computing, 37 credits of general education are required: 34 compulsory and 3 free electives, as follows:

A) The compulsory courses:

Course Code	Course Title	Pre-Requisites	Credits
ARAB 101	Basic Academic Arabic		3
ARAB 201	Advanced Academic Arabic	ARAB 101	3

Course Code	Course Title	Pre-Requisites	Credits
ENGL 100	General English		3
ENGL 101	Basic Academic English I		3
ENGL 102	Basic Academic English II	ENGL 101	3
ENGL 203	Advanced Academic English I	ENGL 102	3
ENGL 206	Technical Writing	ENGL 102	3
MATH 100	Mathematics I		3
STAT 100	Introduction to Probability and Statistics	MATH 100	3
IT 100	Information Technology		3
SOCS 101	Islamic Civilization I		3
PHE 101	Physical and Health Education		1
Total			34

B) Free Elective Course - 3 credit hours selected from the following list:

Course Code	Course Title	Pre-Requisites	Credits
FREN 101	Basic French I		3
CIT 101	Future Technologies		3
SOCS 201	Islamic Civilization II	SOCS 101	3
SOCS 202	World Civilization		3
SOCS 203	History of the Kingdom of Saudi Arabia		3
ASTR 150	Introduction to Astronomy		3
CHEM 150	Chemistry and Society		3

College Requirements

The College of Computing requires the following 37 credits for the bachelor degree:

Course Code	Course Title	Pre-Requisite Courses	Credits
CSC 100	Introduction to Computing		3
MATH 101	Calculus I	MATH 100	3
MATH 102	Calculus II	MATH 101	3
STAT 230	Probability and Statistics	STAT 100	3
PHYS 101	General Physics I	MATH 100	3
PHYS 101L	General Physics I Lab	PHYS 101	1
CEN 220	Logic Design	CSC 100	3
CEN 220L	Logic Design Lab	CEN 220	1
CSC 102	Computer Programming I	CSC 100	3
CSC 102L	Computer Programming I Lab	CSC 102	1
CSC 212	Algorithms and Data Structure	CSC 102	3
CEN 221	Computer Organization and Assembly Language	CSC 212	3
CEN 221L	Computer Organization and Assembly Lang. Lab	CEN 221	1
CEN 320	Computer Architecture	CEN 221	3
CSC 492	Computing Ethics		3
Total			37

In addition to the college compulsory requirements, students may elect to enroll in zero credits professional certificate program consisting of the following courses:

Course Code	Course Title	Pre-Requisite Courses	Credits
TECH 101	Professional Certificate I		0
TECH 102	Professional Certificate II	TECH 101	0
TECH 103	Professional Certificate III	TECH 102	0
TECH 104	Professional Certificate IV	TECH 103	0

Final Year Project

As part of their fourth year, all College of Computing students following a bachelor program are required to carry out a project and submit a technical report. This project is a substantial piece of work that will require creative activity and original thinking. Students in groups, normally three per group, are supervised while working on a project accounting for 4 credits, extending over a full academic year. The project aims to provide students with a transitional experience from the academic world to the professional world. It is designed to serve as a platform on which students in teams engage in a meaningful design experience requiring the solution of engineering design projects. The project is important for a number of reasons:

- It is the largest single piece of design work that a student does during his/her bachelor's degree program.
- It allows students to specialize in a topic that they enjoy.
- It is the work that prospective employers will most likely ask students about during an interview.
- It allows students to show a wide range of the skills learned.
- Students must demonstrate these skills by delivering a product that has passed through the design, analysis, testing and evaluation stages.

Internship Requirement

All students at the College of Computing are required to fulfill a 1 credit hour internship period of 8 to 12 weeks. This graduation requirement entails that each senior student gains practical training experience during the summer term prior to graduation, or during the graduation year, with either a company or another academic institution.

College of Computing Laboratories

The College of Computing hosts several state-of-the-art instructional and research laboratories, which provide students with practical and advanced hands-on experience. These laboratories include:

1. Computer Programming Laboratories: used mainly to apply for programming courses through languages such as C++, Java and database management systems. In addition, these laboratories provide students with access to advanced applications for Multimedia, modeling and simulation of software and hardware systems.
2. Digital Systems Laboratory: offers students the proper environment, with electronic equipment, computers, and software, to design, implement, and test microprocessor and microcontroller systems.
3. Networks Laboratory: introduces Computer Network concepts and protocols. Network hardware (routers, switches, modems) is used and software protocols are applied (IP, ARP, ICMP, UDP, TCP, DNS, routing protocols (RIP, OSPF, BGP), NAT, DHCP, SNMP)
4. Cisco Academy Laboratory: Students gain access to standards-based courses that support core academics and align to in-demand job skills and globally recognized certifications, including the CCENT certification for entry-level network technicians and the CCNA Security certification for security specialists.
5. BEAMS Laboratory: The BEAMS (Big Data, Empirical Analysis, Artificial Intelligence, Machine Learning, and Data Science) Laboratory provides students with an environment and tools necessary for designing, implementing, and testing algorithms and systems

related to AI, ML, and Data Science. This lab features high-performance computing resources, access to popular AI/ML frameworks (e.g., TensorFlow, PyTorch), and extensive datasets for various applications including computer vision, natural language processing, and predictive analytics. Students can engage in projects that explore the latest advancements in AI, ML, and Data Science, fostering innovation and practical problem-solving skills. The BEAMS lab is a beacon for students aiming to illuminate new insights and drive technological innovation.

DEPARTMENT OF COMPUTER SCIENCE

Mission

The Department of Computer Science is committed to offering quality education in Computer Science, mathematics, physical sciences, and technology, while promoting major research and practical experiences. It focuses on developing leadership skills in students for regional development and emphasizes community service as a core part of the academic experience.

Department Objectives

1. Quality Education: To provide students with comprehensive education in Computer Science, mathematics, physical sciences, and technology, ensuring a deep understanding of fundamental concepts.
2. Research and Practical Application: To engage students in major research initiatives and practical experiences, encouraging them to apply theoretical knowledge in real-world scenarios.
3. Development of Leadership Skills: To cultivate leadership abilities in students, particularly focusing on contributing to regional development and preparing them to take on key roles in their professional careers.
4. Community Service: To integrate community service into the curriculum, encouraging students to actively participate in community-oriented projects, thereby fostering a sense of social responsibility.
5. Diverse Career Paths: To equip students with a versatile skill set that prepares them for a wide range of careers in the tech industry, academia, or as entrepreneurs, reflecting the diverse applications of computer science.

Academic Programs

The Department of Computer Science offers two undergraduate programs:

- Bachelor of Science in Computer Science (BCS)
- Bachelor of Science in Information Technology (BIT)

Programs Tracks

The Department of Computer Science offers five tracks of the offered programs as follows:

a) Bachelor of Science in Computer Science (BCS)
   - General Computer Science Track
   - Cybersecurity Track

b) Bachelor of Science in Information Technology (BIT)
   - General Information Technology Track
   - Artificial Intelligence and Machine Learning Track
   - Data Science and Analytics Track

Study Abroad Opportunities

As part of our commitment to providing a diverse and enriching educational experience, the College of Computing at FBSU offers a unique study abroad opportunity in collaboration with the University of Bridgeport (UB). This program allows students to pursue a dual degree, earning a Bachelor of Science in Computer Science from FBSU and a Bachelor of Science in Computer Engineering Technology from the UB.

Program Structure:

A) Duration:

The dual-degree program spans six years, with the initial years focused on completing the requirements for the Computer Science degree at FBSU.

B) Dual-Degree Track:

Students will follow a designated course plan that integrates both the Computer Science curriculum at FBSU and the Computer Engineering Technology curriculum at the UB.

C) Semester Distribution:

The program is structured to allocate specific semesters for study at each university.

- FBSU semesters (Years 1-4): Students will complete the majority of their coursework at FBSU.
- UB semesters (Year 5): Students will spend this year exclusively at the University of Bridgeport.

BACHELOR OF COMPUTER SCIENCE (BCS) PROGRAM

Overview

The curriculum of the BCS program is designed to grant students a Bachelor of Computer Science degree upon the successful completion of the four-year program.

Mission

The Computer Science program is dedicated to delivering high-quality education, fostering leadership skills, and addressing the diverse needs in teaching, learning, and research. It emphasizes community service and integrates a comprehensive technology infrastructure, preparing students to lead and excel in the evolving field of computer science.

Objectives

- Provide students with knowledge of the fundamentals in computer science theory, design skills, and basic sciences for a career in computer science.
- Develop students' skills in theoretical and practical knowledge as well as in field training in Computer Science.
- Sharpen students' analytic, interpretive, and communicative skills including oral, written and teamwork as well as ethical conduct.
- Provide students with means to address contemporary research problems in Computer Science and apply the acquired knowledge in industrial settings.
- Accommodate recent advances in Computer Science via periodic revision of the curriculum.

Learning Outcomes

The Computer Science program at FBSU strives to achieve success by ensuring that graduates:

Knowledge and Understanding

K1 Show knowledge of fundamental Mathematics, Science, and CS in Real life.

K2 Outline acquired education to understand the impact of computer solutions in a global, economic, environmental, and societa7l context.

K3 Define the design of a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, ethical, health and safety, manufacturability, and sustainability.

K4 Describe the major tracks of CS involved in the industry.

Skills

S1 Examine the efficiency and usefulness of CS principles in a broad range of non-computing applications.

S2 Develop the design and implementation of a computer-based system, process, or program to meet desired needs within realistic constraints.

S3 Formulate, and solve major CS problems.

S4 Compare between various development tools and CS tools used in designing projects.

S5 Compare design and development principles in the construction of software systems of varying complexity.

Values

V1 Maximize a good level of understanding of professional and ethical responsibilities as part

of a team.

V2 Show work skills independently and as part of a team, and exhibit leadership characteristics.

V3 Communicate effectively with other members of the team.

V4 Demonstrate communication skills such as writing, reading, presenting, negotiating and debating.

Programs Tracks

The Bachelor of Science in Computer Science offers two tracks as follows:

- General Computer Science:
  This track provides a comprehensive foundation in computer science, covering essential topics like algorithms, data structures, software engineering, and computer architecture. It's designed for students who wish to gain a broad understanding of the field and its applications.
- Cybersecurity Track:
  This track is tailored for students interested in safeguarding computer systems, networks, and data. The curriculum includes network security, cryptography, ethical hacking, and cybersecurity policy, preparing students for the dynamic and vital field of cybersecurity.

Career Opportunities

The Department of Computer science is committed to providing its students with meaningful, up-to-date skills and knowledge that will allow them to pursue successful careers and make deep impacts at leading commercial hardware and software companies. With these objectives in mind, the BCS program is designed around fostering contemporary best practices and skills in line with the job opportunities for computing professionals.

Computer science is a broad and diverse field and rivals all other disciplines in its impact on society. The expanding role of computer science in today's society reflects the variety and scope of this exciting profession. Local, regional as well as global career opportunities available for computer scientists, including but not limited to programming and software development, information systems operation and management, telecommunications and networking, computer science research, web and Internet, graphics and multimedia, training and support, and computer industry specialists.

The graduate student of the BCS program will be able to join the industry in the following occupations:

- Network Security Expert/Officer
- System Administrator
- System Operator
- Software Engineer
- Database Administrator
- IT Trainer
- Computer Programmer
- Webmaster and Web Designer
- Computer sales support specialist
- Web Designer

Degree Requirements

To graduate with a Bachelor of Science in Computer Science, students must satisfactorily complete a four-year program consisting of 139 credit hours. The distribution of courses is as follows:

- University Requirements 37 Credits
- College Requirements 37 Credits
- Computer Science Requirements 65 Credits

Total **139 Credits**

Program Requirements

Program specialization requirements consist of 65 credit hours: 50 compulsory credit hours and 15 elective credit hours distributed as follows:

A) Complusory Requirements (50 Credits):

Course Code	Course Title	Credits	Pre-Requisites
MATH 211	Discrete Mathmatics	3	MATH 102
MATH 215	Linear Algebra and Numerical Techniques	3	MATH 102
CSC 201	Computer Programming II	3	CSC 102
CSC 201L	Computer Programming II Lab	1	CSC 201 (co)
CSC 212L	Algorithms and Data Structure Lab	1	CSC 212 (co)
CSC 356	Design and Analysis of Algorithms	3	CSC 212
CSC 357	Theory of Computation	3	MATH 211
CSC 358	Programming Languages	3	CSC 212
CSC 360	Internet Programming and Web Design	3	CSC 201
CSC 360L	Internet Programming and Web Design Lab	1	CSC 360 (co)
CSC 372	Operating Systems	3	CSC 358
CSC 372L	Operating Systems Lab	1	CSC 372 (co)
CIT 350	Database Systems	3	CSC 212
CIT 350L	Database Systems Lab	1	CIT 350 (co)
CIT 472	Human-Computer Interaction	3	CSC 382
CSC 382	Software Engineering*	3	CIT 350
CEN 340	Computer Networks *	3	CEN 221
CEN 340L	Computer Networks Lab	1	CEN 340 (co)
CSC 387	Artificial Intelligence *	3	MATH 211
CSC 398	Internship	1	ENGL 206
CSC 498	Final Year Project I	1	Senior Standing
CSC 499	Final Year Project II	3	CSC 498
Total		**50**	

* *International Certificate*

B) Elective Requirements (15 credit hours)

To be selected from one of the following lists according to the program track:

1. General Computer Science Track Elective Requirements

Course Code	Course Title	Credits	Pre-Requisites
CSC 262	Introduction to Multimedia Concepts	3	CSC 212
CSC 359	Parallel Computing	3	CEN 340
CSC 374	Compiler Construction	3	CSC 357, CSC 358
CSC 378	Database Management System	3	CIT 350
CSC 380	Graphical User Interface	3	CSC 382
CSC 386	Advanced Computer Graphics	3	CSC 386
CIT 388	Computer Vision	3	CSC 387
CSC 391	Scientific Visualization	3	CSC 385, CSC 356
CSC 385	Computer Graphics	3	MATH 212
CSC 397	Selected Topics in Computer Science	3	Advisor consent
CSC 475	Computer Arabization	3	CSC 387
CSC 487	Computer Security*	3	CEN 340
CIT 114	Programming with Python*	3	CSC 100
CIT 241	Fundamentals of E-Commerce	3	CSC 102
CIT 470	Project Management	3	CSC 382

** Aljahiziah Exam*

2. Cybersecurity Track Elective Requirements

Course Code	Course Title	Credits	Pre-Requisites
CSC 481	Introduction to Computer Security*	3	CSC 356
CSC 487	Advanced Computer Security*	3	CEN 340
CEN 343	Cryptography and Computer Security*	3	CEN 340
CEN 441	Information Theory	3	CEN 240
CEN 442	Coding Theory	3	STAT 230, MATH 215
CEN 451	Internet Engineering*	3	CEN 340
CSC 489	Selected topics in cybersecurity	3	Advisor consent
CIT 356	Machine Learning, I	3	CIT 114
CIT 372	Cloud Computing and Security	3	CEN 343
CIT 475	Information Security*	3	CEN 340
CIT 476	Machine Learning II	3	CIT 356

** Aljahiziah Exam*

Study Plan (139 Credits)

Year I

First Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 100	General English	3	
ENGL 101	Basic Academic English I	3	
MATH 100	Mathematics I	3	
IT 100	Information Technology	3	
SOCS 101	Islamic Civilization I	3	
PHE 101	Physical and Health Education	1	
	Total Credits	**16**	

Second Semester (19 Credit Hours)

Course	Title	Credits	Prerequisites
STAT 100	Introduction to Probability and Statistics	3	MATH 100
CSC 100	Introduction to Computing	3	IT 100
PHYS 101	General Physics I	3	MATH 100
PHYS 101L	General Physics I Lab	1	PHYS 101 (co)
ENGL 102	Basic Academic English II	3	ENGL 101
MATH 101	Calculus I	3	MATH 100
	Free Elective	3	
	Total Credits	**19**	

Year II

Third Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
MATH 102	Calculus II	3	MATH 101
ENGL 206	Technical Writing	3	ENGL 102
CEN 220	Logic Design	3	CSC 100
CEN 220L	Logic Design Lab	1	CEN 220 (co)
CSC 102	Computer Programming I	3	CSC 100
CSC 102L	Computer Programming I Lab	1	CSC 102(co)
	CS Specialization Elective	3	
	Total Credits	**17**	

Fourth Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
ARAB 101	Basic Academic Arabic	3	
MATH 211	Discrete Mathematics	3	MATH 102
STAT 230	Probability and Statistics	3	STAT 100
CSC 212	Algorithms and Data Structure	3	CSC 102
CSC 212L	Algorithms and Data Structure Lab	1	CSC 212 (co)
CEN 221	Computer Organization and Assembly Language	3	CEN 220
CEN 221L	Computer Organization and Assembly Language Lab	1	CEN 221 (Co)
	Total Credits	**17**	

Year III

Fifth Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
ARAB 201	Advanced Academic Arabic	3	ARAB 101
CSC 201	Computer Programming II	3	CSC 102
CSC 201L	Computer Programming II Lab	1	CSC 201 (co)
CIT 350	Database Systems	3	CSC 212
CIT 350L	Database Systems Lab	1	CIT 350L (co)
CSC 356	Design and Analysis of Algorithms	3	CSC 212
CSC 387	Artificial Intelligence	3	MATH 211
	Total Credits	**17**	

Sixth Semester (19 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 203	Advanced Academic English I	3	ENGL 102
MATH 215	Linear Algebra and Numerical Techniques	3	MATH 102
CEN 320	Computer Architecture	3	CEN 221
CSC 360	Internet Programming and Web Design	3	CSC 201
CSC 360L	Internet Programming and Web Design Lab	1	CSC 360 (co)
CSC 382	Software Engineering	3	CIT 350
	CS Specialization Elective	3	
	Total Credits	**19**	

Summer Semester (1 Credit Hour)

Course	Title	Credits	Prerequisites
CIT 398	Internship	1	
	Total Credits	**1**	

Year IV

Seventh Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
CEN 340	Computer Networks	3	CEN 221
CEN 340L	Computer Networks Lab	1	CEN 340 (co)
CSC 357	Theory of Computation	3	MATH 211
CSC 358	Programming Languages	3	CSC 212
CSC 498	Final Year Project I	1	Senior standing
	CS Specialization Elective	3	
	CS Specialization Elective	3	
	Total Credits	**17**	

Eight Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
CSC 372	Operating Systems	3	CSC 358
CSC 372L	Operating Systems Lab	1	CSC 372 (co)
CIT 472	Human-Computer Interaction	3	CSC 382
CSC 492	Computing Ethics	3	Advisor consent
CSC 499	Final Year Project II	3	CSC 498
	CS Specialization Elective	3	
	Total Credits	**16**	

Total Program Credits	**139**	

Course Descriptions

A) Required Courses:

CSC 100 Introduction to Computing 3(3, 0, 0)

Prerequisite: IT 100

This course provides students with fundamental topics in hardware, software, networking, and computers through both lecture and lab exercises. The course covers a range of business issues, programming, security, and the Microsoft Office Professional for Windows software suite which includes Word, Excel, and PowerPoint are utilized. Additionally, this course covers the fundamentals of algorithms and number systems.

CSC 102 Computer Programming I 3(3, 0, 0)

Prerequisite: CSC 100

Introduction to computer science with emphasis on problem-solving, programming and algorithm design; use of a high-level programming language for solving problems and emphasizing program design and development; topics include basic programming constructs, expressions, conditional statements, loop statements, functions, classes and objects, data types, arrays, and strings.

CSC 102L Computer Programming I Lab 1(0, 0, 2)

Co-requisite: CSC 102

Laboratory experiments to cover CSC 102 material.

CSC 201 Computer Programming II 3(3, 0, 0)

Prerequisite: CSC 102

Introduction to the following object-oriented programming concepts: Object-oriented design; abstraction, encapsulation and information hiding; classes; separation of behavior and implementation; class hierarchies; inheritance; and polymorphism; constructor and accessory concepts; overloading principles.

CSC 201L Computer Programming II Lab 1(0, 0, 2)

Co-requisite: CSC 201

This Lab complements the contents of CSC 201.

CSC 212 Algorithms and Data Structures 3(3, 0, 0)

Prerequisite: CSC 102

This course covers basic data structures and related algorithms. It includes detailed studies of data structures and data abstraction such as queues, linked lists, hashing techniques, trees, the data structure for representing graphs with an emphasis on algorithm design and programming techniques in large programs; introduction to programming complexity and verification as well as fundamental algorithms and their implementation for sorting, searching, merging, hashing, graph-theoretic models, and recursive procedures.

CSC 212L Algorithms and Data Structures Lab 1(0, 0, 2)

Co-requisite: CSC 212

This course is meant to help students explore the use of a variety of data structures and useful such as queues, linked lists, hashing techniques, trees, and graphs. In addition, the course covers techniques for implementing fundamental algorithms for sorting, searching, merging, hashing, and recursive procedures.

CSC 356 Design and Analysis of Algorithms 3(3, 0, 0)

Prerequisite: CSC 212

Techniques for designing and analyzing efficient algorithms and advanced data structures: asymptotic analysis, divide and conquer, greedy algorithms, dynamic programming, and optimization algorithms. This course includes an introduction to NP-Completeness; application to searching, sorting, graphs, matrices, and set manipulation.

CSC 357 Theory of Computation 3(3, 0, 0)

Prerequisites: MATH 211 and CSC 212

Introduction to formal languages and computational models: finite automata, pushdown automata, Turing machines, undesirability, recursive, recursively enumerable functions, and an introduction to Computability and Complexity; applications to compiler design and text processing.

CSC 358 Programming Languages 3(3, 0, 0)

Prerequisite: CSC 212

Comparative study of the design and implementation of advanced programming language features in imperative, scripting, object-oriented, functional, logic, and visual languages. Formal methods for syntactic and semantic description of imperative programming languages are examined. Statement types, data types, variable binding, method binding, and backtracking mechanisms; functional programming language (Haskell or LISP) or logic programming language (Prolog or LISP) with associated Lab.

CSC 360 Internet Programming and Web Design 3(3, 0, 0)

Prerequisites: CSC 201

Hands-on approach in understanding how medium-sized interactive client/server Web applications are built using different types of integrated Web technologies; implementation of a database-driven website, relevant technologies involved in each tier of the web architectural model; accessibility of Web agents and end-users, Web caching and proxy techniques, and security issues and strategies of Web-based applications; operational concepts of the internet and the web, static and client content, dynamically served content, and n-tiered architecture.

CSC 360L Internet Programming and Web Design Lab 1(0, 0, 2)

Co-requisites: CSC 360

Laboratory experience to complement CSC 360 material.

CSC 372 Operating Systems 3(2, 0, 0)

Prerequisites: CSC 358

An overview of operating systems: operating system principles, scheduling and resource management, virtual memory, file systems, concurrent processing and synchronization, Deadlocks, Disk Scheduling; Programming under UNIX with the emphasis on concurrency and Inter-Process Communication (IPC).

CSC 372L Operating Systems Lab 1(0, 0, 2)

Co-requisite: CSC 372

Lab experience to complement CSC 372.

CSC 382 Software Engineering 3(3, 0, 0)

Prerequisites: CIT 350

Overall process of software development: principles of software requirements, analysis, implementation, testing, and maintenance; professional practices, risks and liabilities; a brief survey of available tools and techniques of analysis, planning, design and structure charts, system and information flow diagrams, testing and quality control; basic modeling and design, particularly using UML; project in software engineering techniques.

CEN 340 Computer Networks 3(3, 0, 0)

Prerequisite: CEN 221

Foundation in computer networks - a top-down view of the layered architectural elements of communication systems, focusing on the Internet and TCP/IP; client/server systems, packet switching, protocol stacks, queuing theory, application protocols, socket programming, remote service calls, reliable transport (Error detection and recovery, multimedia networking with quality of service and multicasting), UDP, TCP, and security.

CEN 340L Computer Networks Lab **1(0, 2, 0)**

Co-requisite: CEN 340

Lab experience to complement CEN 384.

CSC 387 Artificial Intelligence **3(3, 0, 0)**

Prerequisites: MATH 211

Introduction to the automation of intelligent capabilities, including intelligent agents, constrains satisfaction problems, knowledge representation and reasoning (search and logical inference), interpreting, behavior modeling and learning; expert systems, knowledge acquisition, and machine learning will also be stressed; programming projects using an Artificial Intelligence programming Language.

CSC 398 Internship **1(0, 1, 0)**

Prerequisite: ENGL 206

This is an eight to twelve-week professional training field in computer science.

CSC 492 Computing Ethics **3(3, 0, 0)**

Prerequisite: Advisor consent

Critical examination of ethical problems and research methods associated with computer technology; discussion of these problems conducted within the framework of classical philosophical ethical theories; legal and quasi-legal (i.e., policy and regulative) issues; topics addressed include the process of ethical decision-making, privacy and confidentiality, computer crime, professional codes and responsibilities, software piracy, the impact of computers on society, and proliferation of Computers in our World (Education, Medicine, e-government, e-learning. etc.)

CSC 498 Final Year Project I **1 (0, 1, 0)**

Prerequisite: Senior standing

A significant teamwork project experience to integrate much of the material learned in lead-up courses including applications of computer science in various domains. This course involves project selection, literature survey, preparation of the necessary materials for the specific project to be accomplished in CSC 499.

CSC 499 Final Year Project II **3 (0, 3, 0)**

Prerequisite: CSC 498

Continuation of CSC 498: significant project team experience that integrates material learned in lead-up courses, including computer science applications in various domains.

B) Elective Courses

CSC 262 Introduction to Multimedia Concepts **3(3, 0, 0)**

Prerequisite: CSC 212

Concepts of multimedia: principles of graphics, sound, video, and animation; scripting techniques; contemporary multimedia programs to develop and create an interactive multimedia project.

CSC 359 Parallel Computing **3(3, 0, 0)**

Prerequisites: CEN 221 and CSC 356

Essentials of parallel computers and associated programming methodology; basic architecture of parallel computers including shared memory, message passing, meshes, and hyper-cubes; basic techniques of parallel computations, portioning and divide-conquer; basic algorithms such as searching algorithms, numerical algorithms, etc.

CSC 374 Compiler Construction **3(3, 0, 0)**

Prerequisites: CSC 357 and CSC 358

An understanding of how compilers work: a simple compiler, context-free grammars, lexical analysis, top-down parsing, bottom-up parsing, semantic analysis, and code generation; programming projects.

CSC 378 Database Management Systems 3(3, 0, 0)

Prerequisite: CIT 350

Essentials of database management system with an emphasis on relational ones: query and transaction processing, concurrency control, recovery, distributed transactions and database security; web deployed database systems – data mining – data warehousing, OLAP – Object Oriented.

CSC 380 Graphical User Interface 3(3, 0, 0)

Prerequisite: CSC 358

Concepts and techniques used in the design and implementation of interactive systems: interface design guidelines, human factors, technical methods of user interface design, and the design and execution of usability studies; application of various techniques through the design, creation, and testing of an interactive software application.

CSC 385 Computer Graphics 3(3, 0, 0)

Prerequisites: MATH 215

Fundamentals of computer graphics with emphasis on 2-D graphics using an application-based approach: graphics output primitives, their attributes, colors, transformations, anti-aliasing, texture mapping, and curves and surfaces; 2D graphics algorithms, essentials of user interface and window management systems, and graphics hardware; programming using OpenGL.

CSC 386 Advanced Computer Graphics 3(3, 0, 0)

Prerequisite: CSC 385

Basic concepts of 3D computer graphics using an application-based approach: 3D object representations and manipulations; 3D transformation and viewing; hidden-surface and hidden-line removal; shading models; rendering; texture mapping; ray-tracing; animation techniques; programming using OpenGL.

CSC 388 Computer Vision 3(3, 0, 0)

Prerequisites: CSC 387

Introduction to the basic techniques of automated (computer) processing, analysis, and understanding of image/video data: geometry and physics of image formation, image enhancement, feature extraction, video imagery, multi-view imagery analysis.

CSC 391 Scientific Visualization 3(3, 0, 0)

Prerequisites: CSC 385 and CSC 356

Techniques in scientific data visualization with an object-oriented approach: basic data representation, visualization schemes for scalar, vector and other types of data, basic algorithms for the generation of ISO-surface and volume visualization; applications include 3D medical imaging, financial applications, modeling, algorithms visualization and others.

CSC 397 Selected Topics in Computer Science 3(3, 0, 0)

Prerequisite: Advisor consent

This course includes a presentation on a selected topic of interest to the instructor and/or students. Topics will be chosen from state-of-the-art innovations in computer science.

CSC 475 Computer Arabization 3(3, 0, 0)

Prerequisites: CSC 385

Issues and techniques in Computer Arabization: System Arabization level such as font and code page manipulation – keyboard, screen and printer Arabization, Arabic text-editing, morphology, information retrieval, language comprehension, spell and grammar checking, world-wide-web browsers, and computer-aided education; foundations of applications in Speech Recognition – Neural network - Pattern Recognition for Arabic Language - Machine Translation.

CSC 481 Introduction to Computer Security 3(3, 0, 0)

Prerequisite: CEN 340

Introduction to cryptography and the security of networks and databases: classical encryption; modern encryption techniques; public-key encryption; elliptic curve cryptography; message authentication, message digest functions; and methods for relational database security, including access control, system and network attacks and defenses – intrusion detection and preventions– risk assessment and management.

CSC 487 Advanced Computer Security 3(3, 0, 0)

Pre-requisite: CSC 481

Advanced mechanisms and implementation of computer security and data protection; Policy, encryption and authentication, access control and integrity models and mechanisms; network security; secure systems; programming and vulnerabilities analysis. Study of an existing operating system.

CSC 489 Selected topics in cybersecurity 3(3, 0, 0)

Pre-requisite: Advisor consent

The course "Selected Topics in Cybersecurity" offers an exploration of advanced and emerging areas within the field of cybersecurity. It provides an opportunity for students to delve into specific topics of interest and relevance to the changing landscape of cybersecurity. The course focuses on in-depth study, analysis, and practical applications of selected topics, allowing students to gain specialized knowledge and skills in those areas. The main topics include Threat Intelligence and Cyber Threat Hunting, Cloud Security and Virtualization, Secure Software Development, Machine Learning for Cybersecurity, Internet of Things (IoT) Security, Blockchain Security, Cybersecurity Governance and Compliance, Data Privacy and Protection

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY (BIT) PROGRAM

Overview

This program is designed to grant students the Bachelor of Science in Information Technology degree upon the successful completion of the four-year program.

Mission

The mission of BIT program is to build high-quality information technology resources that integrate comprehensive technology infrastructure to meet the diverse needs in teaching and learning, research, and community services engagement.

Objectives

- Perform periodical amendments in BIT program to keep the curriculum intact and updated according to the industrial needs.
- Develop students' ability to apply modern BIT theories and practical knowledge to the contemporary and real time environment.
- Identify, evaluate current and emerging technologies and assess their applicability to address the users' needs and recognize the need for continued learning throughout their career.
- Develop an understanding of professional responsibility to evaluate their professional, social, and ethical obligations to the community, employers, and their peers.
- Develop an understanding of the commitment needed to pursue lifelong goals through educational and professional endeavors.

Learning Outcomes

The BIT at FBSU strives to achieve success by ensuring that graduates:

Knowledge and Understanding

K1 Recognize the necessary theoretical and practical knowledge in IT.

K2 State the ability to be self-motivated life-long learners.

K3 Record the ability to think in a multi-disciplinary manner.

Skills

S1 Demonstrate IT skills to analyze problems, design and implement solutions, and verify their correctness.

S2 Write technical reports and prepare professional presentations in the discipline.

S3 Develop effective oral and written communication.

Values

V1 Illustrate the integration of ethical, social and legal concerns in IT solutions to problems.

V2 Operate smoothly and effectively in teamwork as a member and as a leader to develop and deliver quality IT solutions

Programs Tracks

The Bachelor of Science in Information Technology offers three tracks as follows:

1. General Information Technology:
   Focusing on the practical aspects of IT, this track covers a wide range of topics, including system administration, network management, and IT support, preparing students for diverse roles in the IT industry.

2. Artificial Intelligence and Machine Learning Track:
   This track delves into the cutting-edge fields of AI and machine learning. Students will learn about neural networks, AI programming, machine learning algorithms, and their applications in various industries.
3. Data Science and Analytics Track:
   Designed for students interested in data-driven decision-making, this track includes coursework in statistics, data analysis, big data technologies, and data visualization, equipping students with the skills to turn data into insights.

Career Opportunities

The high demands for Computer Information Technology (BIT) indicate that the CIT sector has the highest growth expectations across all sectors. Most recent statistics indicate that graduates with university-level technology qualifications have one of the best career perspectives nationwide.

Despite the growing demand for IT graduates, the number of graduated students indicates a shortage of IT graduates and employers find them the hardest to source. BIT graduates may go on to work for organizations like Google, Amazon, Facebook or Apple.

The graduate student of the BIT program will be successful and eager in all of the following fields:

- Systems designer
- Database developer
- Web programmer
- E-Commerce application developer
- Systems manager
- Database administrator
- Web developer
- Educator

Degree Requirement

To graduate with a Bachelor of Science in Information Technology, students must complete a four-year program consisting of 138 credit hours. The distribution of courses is as follows:

▪ University Requirements	37 Credits
▪ College Requirements	37 Credits
▪ Information Technology Requirements	64 Credits
Total	**138 Credits**

Program Requirements

Program specialization requirements consist of 64 credit hours: 52 compulsory credithours and 12 elective credit hours distributed as follows:

A) Compulsory Requirements - (52) credit hours:

Course Code	Course Title	Credits	Pre-Requisites
CIT 114	Programming with Python	3	CIT 100
CIT 130	Introduction to web design and development	3	CSC 102
CIT 235	Data Analysis and Design	3	CIT 114
CIT 241	Fundamentals of E-Commerce	3	CIT 130
CIT 356	Machine Learning I	3	CIT 350
CIT 350	Database Systems	3	Senior standing
CIT 350L	Database Systems Lab	1	CIT 350
CIT 388	Computer Vision	3	CSC 356
CIT 389	Natural Language Processing	3	CSC 212
CIT 398	Internship	1	ENGL 206
CIT 476	Machine Learning II	3	CIT 356
CIT 470	Project Management	3	CSC 382
CSC 379	Human Computer Interaction	3	CSC 212
CIT 498	Final Year Project I	1	Senior standing
CIT 499	Final Year Project II	3	CIT 498
CSC 201	Computer Programming II	3	CSC 102
CSC 201L	Computer Programming II Lab	1	CSC 201
CSC 356	Design and Analysis of Algorithms	3	CSC 212
CSC 382	Software Engineering	3	CSC 212
CSC 387	Artificial Intelligence	3	STAT 201
Total		**52**	

B) Elective Specialization Requirements – (12) credit hours

a) General IT Track Elective Requirements

Course Code	Course Title	Credits	Pre-Requisites
CIT 112	Introduction to Programming concepts and Design	3	CSC 100
CIT 242	Fundamentals of Data Mining	3	CIT 114
CIT 302	Working with Our Environment	3	CIT 235
CIT 304	Introduction To Big Data	3	CIT 114
CIT 306	Deep Learning	3	STAT 230, CSC 387
CIT 360	Advanced Software Engineering	3	CSC 382
CIT 362	Advanced Database Systems*	3	CIT 350
CIT 364	Wireless & Mobile Computing*	3	CSC 102
CIT 372	Cloud Computing and Security*	3	CSC 364
CIT 410	Engineering the Future	3	CSC 382
CIT 412	Selected Topics in Information Technology	3	Advisor consent
CIT 480	Information and Innovation Management	3	CIT 472
CIT 482	Computer Network and Cryptography*	3	CSC 364
CEN 340	Computer Networks*	3	CEN 220
CSC 357	Theory of Computation	3	MATH 211
CSC 358	Programming Languages	3	CSC 201
CSC 372	Operating Systems*	3	CSC 201

** Aljahiziah Exam*

b) Artificial Intelligence Track Elective Requirements

Course Code	Course Title	Credits	Pre-Requisites
CIT 112	Introduction to Programming concepts and Design	3	CSC 100
CIT 240	Fundamentals of Data Mining	3	CIT 114
CIT 304	Introduction To Big Data*	3	CIT 114
CIT 306	Deep Learning	3	STAT 230, CSC 387
CIT 360	Advanced Software Engineering	3	CSC 382
CIT 364	Wireless & Mobile Computing*	3	CSC 102
CIT 372	Cloud Computing and Security*	3	CSC 364
CIT 382	Evolutionary Computation and Global Optimization	3	
CIT 397	Selected Topics in Machine Learning	3	Advisor consent
CIT 480	Information and Innovation Management	3	CIT 472
CIT 482	Computer Network and Cryptography*	3	CSC 364
CSC 372	Operating Systems*	3	CSC 201
CSC 385	Computer Graphics	3	CSC 387
MATH 215	Linear Algebra and Numerical Techniques	3	MATH 102

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c) Data Science Track Elective Requirements

Course Code	Course Title	Credits	Pre-Requisites
CIT 112	Introduction to Programming concepts and Design	3	CSC 100
CIT 240	Fundamentals of Data Mining	3	CIT 114
CIT 304	Introduction To Big Data*	3	CIT 114
CIT 306	Deep Learning	3	STAT 230, CSC 387
CIT 360	Advanced Software Engineering	3	CSC 382
CIT 364	Wireless & Mobile Computing*	3	CSC 102
CIT 372	Cloud Computing and Security*	3	CSC 364
CIT 397	Selected Topics in Machine Learning	3	Advisor consent
CIT 480	Information and Innovation Management	3	CIT 472
CIT 482	Computer Network and Cryptography*	3	CSC 364
CSC 372	Operating Systems*	3	CSC 201
CSC 383	Digital Media	3	Senior Standing
CSC 385	Computer Graphics	3	CSC 387

* *Aljahiziah Exam*

Study Plan (138 Credits)

Year I

First Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 100	General English	3	
ENGL 101	Basic Academic English I	3	
MATH 100	Mathematics I	3	
IT 100	Information Technology	3	
SOCS 101	Islamic Civilization I	3	
PHE 101	Physical and Health Education	1	
	Total Credits	**16**	

Second Semester (19 Credit Hours)

Course	Title	Credits	Prerequisites
STAT 100	Introduction to Probability and Statistics	3	MATH 100
CSC 100	Introduction to Computing	3	IT 100
PHYS 101	General Physics I	3	MATH 100
ENGL 102	Basic Academic English II	3	ENGL 101
PHYS 101L	General Physics I Lab	1	PHYS 101
MATH 101	Calculus I	3	MATH 100
	IT Specialization Elective	3	
	Total Credits	**19**	

Year II

Third Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
CIT 114	Programming with Python	3	CIT 100
CEN 220	Logic Design	3	CSC 100
CEN 220L	Logic Design Lab	1	CEN 220 (co)
CSC 102	Computer Programming I	3	CSC 100
CSC 102L	Computer Programming I Lab	1	CSC 102(co)
ENGL 206	Technical Writing	3	ENGL 102
MATH 102	Calculus II	3	MATH 101
	Total Credits	**17**	

Fourth Semester (19 Credit Hours)

Course	Title	Credits	Prerequisites
STAT 230	Probability and Statistics	3	Math 102
CEN 221	Computer Organization and Assembly Lang.	3	CEN 220
CEN 221L	Computer Organization and Assembly Lang. Lab	1	CEN 221(co)
CIT 130	Introduction to web design and development	3	CSC 102
ARAB 101	Basic Academic Arabic	3	
CIT 241	Fundamentals of E-Commerce	3	CIT 130 (co)
	Free Elective	3	
	Total Credits	**19**	

Year III

Fifth Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
CEN 320	Computer Architecture	3	CEN 220
CSC 212	Algorithms and Data Structure	3	CSC 102
CIT 235	Data Analysis and Design	3	CIT 130
ARAB 201	Advanced Academic Arabic	3	ARAB 101
ENGL 203	Advanced Academic English I	3	ENHL 102
	IT Specialization Elective	3	
	Total Credits	**18**	

Sixth Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
CSC 201	Computer Programming II	3	CSC 102
CSC 201L	Computer Programming II Lab	1	CSC 201 (co)
CIT 356	Machine Learning, I	3	CIT 235
CSC 382	Software Engineering	3	CSC 102
CIT 350	Database Systems	3	CIT 235
CIT 350L	Database Systems Lab	1	CIT 350 (co)
CSC 492	Computing Ethics	3	ENGL 102
	Total Credits	**17**	

Summer Semester (1 Credit Hours)

Course	Title	Credits	Prerequisites
CIT 398	Internship	1	ENGL 206
	Total Credits	**1**	

Year IV

Seventh Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
CIT 476	Machine Learning II	3	CIT 356
CSC 387	Artificial Intelligence	3	STAT 230
CSC 356	Design and Analysis of Algorithms	3	CSC 212
CIT 498	Final Year Project I	1	ENGL 206
CSC 379	Human-Computer Interaction	3	CSC 212
	IT Specialization Elective	3	
	Total Credits	**16**	

Eight Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
CIT 389	Natural Language Processing	3	CSC 387
CIT 388	Computer Vision	3	CSC 387
CIT 470	Project Management	3	CSC 382
CIT 499	Final Year Project II	3	CIT 498
	IT Specialization Elective	3	
	Total Credits	**15**	

Total Program Credits	**138**	

Course Descriptions

A) Core Courses:

CIT 114 Programming with Python 3(3, 0, 0)

Prerequisite: CSC 100

Python is a language with a simple syntax, and a powerful set of libraries. It is an interpreted language, with a rich programming environment, including a robust debugger and profiler. While it is easy for beginners to learn, it is widely used in many scientific areas for data exploration. This course introduces the Python programming language for students without prior programming experience. We cover data types, control flow, object-oriented programming, and graphical user interface-driven applications. The examples and problems used in this course are drawn from diverse areas such as text processing, simple graphics creation and image manipulation, HTML and web programming, and genomics.

CIT 130 Introduction to Web Design and Development 3(3, 0, 0)

Prerequisite: CIT 102

This course introduces the student to design and development practices for multimedia content, focusing particularly on web sites. Modern design practices for the web are taught, framed by an introduction to human-centered design techniques, particularly heuristic-based interface design guidelines for web interfaces and web accessibility from a global perspective. The course also introduces some basic scripting techniques for going beyond static content. The focus of learning is activity based and incorporates both individual and team-based exercises.

CIT 235 Data Analysis and Design 3(3, 0, 0)

Prerequisite: CIT 114

This course introduces the data analytics life cycle. It critically analyses methods of dealing with internal and external data available to organizations. This includes data sourced from cloud and social networks. Effective data usage must consider efficient data storage and retrieval methodologies to realize potential organizational benefits. Students will apply data modelling techniques and data design strategies to complex problems to illustrate how to maximize the efficient storage and retrieval of organizational data.

CIT 241 Fundamentals of ECommerce 3(3, 0, 0)

Co-requisite: CIT 130

Introduces students to the nature of electronic commerce/online business, business decision-making involving electronic commerce/online business. Management issues of technological infrastructure security, privacy and website development for electronic commerce/online business.

CIT 350 Database Systems 3(3, 0, 0)

Prerequisite: CIT 235

An introduction to data modeling and various relational models in a database system; the entity-relationship model, SQL and integrity constraints, file organization and index files; and normalization.

CIT 350L Database Systems Lab 1(0, 0, 2)

Co-requisite: CIT 350

Laboratory experience to complement CIT 350 material.

CIT 356 Machine Learning I 3(3, 0, 0)

Prerequisite: CIT 235

This course provides a broad introduction to machine learning and statistical pattern recognition. Topics include supervised learning (generative/discriminative learning, parametric/non-parametric learning, neural networks, support vector machines); unsupervised learning (clustering, dimensionality reduction, kernel methods). The course will also discuss recent machine learning

applications, such as robotic control, autonomous navigation, bioinformatics, speech recognition, and text and web data processing.

CIT 388 Computer Vision 3(3, 0, 0)

Prerequisites: CIT 387

Fundamentals of computer vision including image formation, camera imaging geometry, feature detection and matching, stereo, motion estimation and tracking, image classification and scene understanding. Focus of course is to develop intuitions and mathematics of the lecture methods and then to learn about the difference between theory and practice in the projects.

CIT 389 Natural Language Processing 3(3, 0, 0)

Prerequisites: CSC 387

This course provides a comprehensive introduction to Natural Language Processing (NLP), a field of computer science and artificial intelligence that deals with the interactions between computers and human languages. Students will gain an understanding of the fundamental concepts, techniques, and applications of NLP, enabling them to develop systems that can analyze, understand, and generate human language in various forms.

CIT 398 Internship 1(0, 1, 0)

Prerequisite: ENGL 206

This is an eight to a twelve-week professional training course in computer information technology.

CIT 470 Project Management 3(3, 0, 0)

Prerequisite: CSC 382

This course introduces students to the concepts currently being used in the emerging professional field of Project Management. Project Management is designed to build and expand the foundation of knowledge needed by successful managers.

CIT 472 Human-Computer Interaction 3(3, 0, 0)

Prerequisite: Senior Standing

Formal methods for facilitating human-computer communication: information processing characteristics important to facilitate human-computer interaction, and formal models of human-computer interaction; dialogue techniques, response times and display rates, information presentation, interaction devices, computer training, help systems, information search and visualization, and hypermedia, Usability evaluation – Other forms of input/output.

CIT 476 Machine Learning II 3(3, 0, 0)

Prerequisite: CIT 356

Advanced statistical pattern recognition and machine learning are introduced in this course, intended for a wide audience. Advanced machine learning and reinforcements techniques are topics covered in this course. The course will also cover advanced machine learning applications, such as robotic control, autonomous navigation, bioinformatics, voice recognition, text and online data processing, and bioinformatics applications.

CIT 498 Final Year Project I 1 (0, 1, 0)

Prerequisite: ENGL 206

A significant teamwork project experience to integrate much of the material learned in lead-up courses including applications of IT in various domains. This course involves project selection, literature survey, and preparation of the necessary materials for the specific project in CSC 499.

CIT 499 Final Year Project II 3 (0, 3, 0)

Prerequisite: CIT 498

Continuation of CIT 498: significant project team experience that integrates material learned in lead-up courses, including applications of IT in various domains.

B) Elective Courses

CIT 242 Fundamental of Data Mining 3(3, 0, 0)

Prerequisite: CSC 235

An introduction to data mining includes the basic concepts, principles, methods, implementation techniques, and applications of data mining, focusing on two major data mining functions: (1) pattern discovery and (2) cluster analysis.

CIT 306 Deep Learning 3(3, 0, 0)

Prerequisites: STAT230, CSC 387

Deep Learning is one of the most highly sought-after skills in AI. We will help you become good at Deep Learning. In this course, you will learn the foundations of Deep Learning, how to build neural networks, and how to lead successful machine learning projects. You will learn about Convolutional networks, RNNs, LSTM, Adam, Dropout, and more. You will work on case studies from healthcare, autonomous driving, sign language reading, music generation, and natural language processing. You will master the theory and see how it is applied in the industry.

CIT 360 Advanced Software Engineering 3(3, 0, 0)

Prerequisite: CSC 382

This course covers techniques that scale to programming large software systems with teams of programmers. The techniques are explained in the specification, implementation, testing and maintenance of software systems. This course focuses on the technical and management processes and practices used for the effective and efficient development of high-quality, complex systems. This course will cover software engineering topics associated with large systems development such as requirements and specifications, testing and maintenance, and design, emphasizing verification and validation techniques. Specific attention will be given to development tools and automated support environments.

CIT 362 Advanced Database Systems 3(3, 0, 0)

Prerequisite CIT 350

Distributed database design, query and transaction processing. Data integration, data warehousing, data cleansing, management of spatial data, and data from large scale distributed devices.

CSC 385 Computer Graphics 3(3, 0, 0)

Prerequisites: CSC 387

Fundamentals of computer graphics with emphasis on 2-D graphics using an application-based approach: graphics output primitives, their attributes, colors, transformations, anti-aliasing, texture mapping, and curves and surfaces; 2D graphics algorithms, essentials of user interface and window management systems, and graphics hardware; programming using OpenGL.

CSC 387 Artificial Intelligence 3(3, 0, 0)

Prerequisites: STAT 230

This is an introductory course on Artificial Intelligence. The topics may include: AI methodology and fundamentals; intelligent agents; search algorithms; game playing; supervised and unsupervised learning; decision tree learning; neural networks; nearest neighbor methods; dimensionality reduction; clustering; kernel machines; support vector machines; uncertainty and probability theory; probabilistic reasoning in AI; Bayesian networks; statistical learning; fuzzy logic. Several assignments will be given to enable the student to gain practical experience in using these techniques.

CSC 356 Design and Analysis of Algorithms 1(0, 1, 0)

Prerequisite: CSC 212

Techniques for designing and analyzing efficient algorithms and advanced data structures: asymptotic analysis, divide and conquer, greedy algorithms, dynamic programming, and optimization algorithms. This course includes an introduction to NP-Completeness; and its

application to searching, sorting, graphs, matrices, and set manipulation.

CSC 358 Programming Languages 3(3, 0, 0)

Prerequisite: CSC 212

Comparative study of the design and implementation of advanced programming language features in imperative, scripting, object-oriented, functional, logic, and visual languages. Formal methods for syntactic and semantic description of imperative programming languages are examined. Statement types, data types, variable binding, method binding, and backtracking mechanisms; functional programming language (Haskell or LISP) or logic programming language (Prolog or LISP) with associated Lab.

CSC 372 Operating Systems 3(2, 0, 0)

Prerequisite: CSC 201

An overview of operating systems: operating system principles, scheduling and resource management, virtual memory, file systems, concurrent processing and synchronization, Deadlocks, Disk Scheduling; Programming under UNIX with an emphasis on concurrency and Inter-Process Communication (IPC).

CSC 382 Software Engineering 3(3, 0, 0)

Prerequisite: CSC 102

Overall process of software development: principles of software requirements, analysis, implementation, testing, and maintenance; professional practices, risks and liabilities; a brief survey of available tools and techniques of analysis, planning, design and structure charts, system and information flow diagrams, testing and quality control; basic modeling and design, using UML; project in software engineering techniques.

CSC 383 Digital Media 3(3, 0, 0)

Prerequisite: Senior Standing

Technical aspects of digital media: capturing, storage, digital representation, compression, and generation of digital media; forms of media including text, images, 2D animation, video, sound, and 3D graphics and animation.

CSC 397 Selected Topics in Machine Learning 3(3, 0, 0)

Prerequisite: CIT 476

This course includes presenting a selected topic of interest to the instructor and/or students. Topics will be chosen from state-of-the-art innovations in machine learning. Prerequisite: Senior Standing or consent of instructor.

CIT 302 Working with Our Environment 3(3, 0, 0)

This course introduces environmental issues and the role of technology in today's fast-paced computer world. It will suit the needs of students whether they intend to study technology or if they have a general interest in learning how to shape a sustainable future. It takes students progressively from the environmental impacts of their lifestyle to the global issues of technological and economic development. They will also learn general skills such as basic numeracy, critical reading, report and essay writing. The course introduces more specific skills and knowledge required for higher-level environment or technology courses.

CIT 304 Introduction to Big Data 3(3, 0, 0)

Prerequisite: CSC 201

Explore the fundamentals of Big Data in this introductory course. Gain insights into the historical evolution of Big Data, its defining characteristics, and the essential technologies driving its analysis, including Apache Hadoop and Spark. Emphasis is placed on real-world applications, challenges, and ethical considerations. Develop practical skills through hands-on exercises and case studies, equipping yourself with the dynamic field of large-scale data analytics.

CIT 362 Advanced Database Systems 3(3, 0, 0)

Prerequisite: CIT 350

Distributed database design, query and transaction processing. Data integration, data warehousing, data cleansing, management of spatial data, and data from large-scale distributed devices.

CIT 372 Cloud Computing and Security 3(3, 0, 0)

Prerequisite: CSC 384

This course offers a comprehensive exploration of the intersection between Cloud Computing and Security. Students will delve into the fundamental principles of cloud computing, understanding its architecture, service models, and deployment models. The curriculum places a particular emphasis on security considerations, addressing key challenges and strategies for safeguarding cloud-based systems and data.

CIT 410 Engineering the Future 3(3, 0, 0)

From design concepts to the manufacturing of products, this course examines the range of human activity that is 'engineering'. It introduces how engineers operate, including issues such as risk assessment and patent law. It looks at current engineering practices and some developments in engineering methods and applications that will shape the future. It offers a general introduction both for those who simply have an interest in what engineering is and how it is practiced in modern society and for those considering engineering at a higher level of study.

CIT 412 Selected Topics in Information Technology 3(3, 0, 0)

Prerequisite: Senior Standing

This course includes presenting a selected topic of interest to the instructor and/or students. Topics will be chosen from state-of-the-art innovations in information technology.

CIT 480 Information and Innovation Management 3(3, 0, 0)

Prerequisite: CIT 470

Introduction to the management of technology and innovation, including strategic and operational technology and innovation management, business competitiveness, business partnerships and alliances, managing R&D, new product development, and valuation of technology.

DEPARTMENT OF COMPUTER ENGINEERING

Mission

The Department of Computer Engineering strives to deliver quality education in Computer Engineering, mathematics, physical sciences, and technology. It focuses on fostering research skills, enhancing students' leadership roles in regional development, and promoting community service. The department is devoted to scientific advancement, professional growth, and embracing diversity, enriching the academic and professional experience.

Department Objectives

1. Comprehensive Education: To provide a quality educational foundation in Computer Engineering, mathematics, physical sciences, and technology, ensuring students gain a thorough understanding of these essential disciplines.
2. Research Skills Development: To foster strong research skills in students, encouraging them to engage in related projects and contribute to the field of Computer Engineering.
3. Leadership and Development: To enhance the leadership capabilities of students, focusing on their role in driving regional development and preparing them for influential positions in their future careers.
4. Community Service and Diversity: To promote active involvement in community service, and aiming to broaden students' perspectives and enhance their professional and personal growth.

Academic Program

The Department of Computer Engineering offers one undergraduate program:

- Bachelor of Sciences in Computer Engineering (BCEN)

BACHELOR OF SCIENCE IN COMPUTER ENGINERING (BCEN) PROGRAM

Overview

The CEN curriculum is a Five-year program designed to grant students the Bachelor of Science in Computer Engineering degree upon the successful completion of the requirements. The first common year with College of Engineering majors allows students to switch between the engineering majors at the start of the second year of their study.

Mission

The Computer Engineering program focuses on building a solid foundation in core engineering principles, and enhancing leadership skills in regional development. The program offers practical design experiences and emphasizes research advancement, along with a strong commitment to community service engagement.

Program Objectives

Graduates of the Bachelor of Science in Computer Engineering (BCEN) program:

1. Possess skills and knowledge that qualify them for professional practice in computer engineering and for admission to reputable graduate programs.
2. Are capable of applying fundamental knowledge, appropriate mathematical principles and computing tools, critical thinking, and best practices in computer engineering analysis and design.
3. Are provided with an educational foundation that fosters creativity, team work, leadership, and communication skills, and prepares them for life-long learning along diverse career paths.
4. Have an appreciation of engineering practice's technical, social, economic, environmental, ethical, and global aspects.

Learning Outcomes

Upon graduation, students with Bachelor of Science in Computer Engineering (BCEN) will be expected to demonstrate:

Knowledge and Understanding

- **K1** Recognize and apply knowledge of fundamental Mathematics, Physics and Science, in CE
- **K2** Outline and reproduce designs and conduct experiments, as well as to analyze and interpret data
- **K3** Describe the design of a system, and component, or process to meet desired needs within realistic constraints such as technical, economic, environmental, social, ethical, health and safety, manufacturability, and sustainability.

Skills

- **S1** Analyze, and judge complex CE problems to provide solutions by applying principles of CE science, and mathematics through critical thinking.
- **S2** Design and implementation of a computer-based system, process, or program to meet desired needs within realistic constraints.
- **S3** Analyze a problem, and identify the computing requirements appropriate to its solution

Values

V1 Show values of professional and ethical responsibilities as an individual or as part of a team.

V2 Demonstrate the ability for collaborative learning and working to finish team assignments and projects on time, while selecting and judging resources and recognizing economic, environmental impact, and ethical responsibilities in CE solutions.

V3 Operate and communicate effectively with other members of the team and a range of audiences

Career Opportunities

The Department of Computer Engineering is committed to providing its students with meaningful, up-to-date skills and knowledge that will allow them to explore the education and skills of computer engineering. Furthermore, allow them to pursue successful careers and make deep impacts at leading commercial hardware and software companies. With these objectives in mind, the BCEN program is designed around fostering contemporary best practices and skills in line with the job opportunities for computing professionals. Career opportunities include:

- Computer Network Engineering
- Computer Systems and Application Development
- Software Design
- Digital Signal and Image Processing
- Integrated Circuit Design
- Internet Applications Development
- Robotics and Automated Manufacturing
- Engineering consulting
- Manufacturing
- Global communication systems
- Instrumentation

Degree Requirement

To graduate with a Bachelor of Science in Computer Engineering (BCEN), students must satisfactory complete a five year program consisting of 158 credit hours distributed as follows:

- University Requirements 37 Credits
- College Requirements 37 Credits
- Computer Engineering Requirements 84 Credits

Total **158 Credits**

Program Requirements

The computer engineering program requirements consist of 84 credit hours; 69 compulsory credit hours and 15 elective credit hours distributed as follows:

A) Compulsory Requirements - (69) credit hours:

Course Code	Course Title	Credits	Pre-Requisites
CEN 240	Signal and Systems	3	CEN 230(co)
CEN 250	Communication Systems	3	CEN 240
CEN 301	Electronics	3	PHYS 102
CEN 301L	Electronics labs	1	CEN 301
CEN 321	Embedded Systems	3	CEN 220
CEN 322L	Digital Systems Lab	1	CEN 321 (co)

Course Code	Course Title	Credits	Pre-Requisites
CSC382	Software Engineering	3	CSC 212
CEN 340	Computer Networks	3	CEN 240
CEN 340L	Networking Lab	1	CEN 340 (co)
CEN 350	Digital Integrated Circuits	3	CEN 301
CSC 372	Operating Systems	3	CEN 221
CEN 210L	Electric Circuits I Lab	1	CEN 210(co)
CEN 210	Electric Circuits I	3	PHYS 102
CEN 230	Electric Circuits II	3	CEN 210
CHEM 101	General Chemistry I	3	MATH 100
CHEM 101L	General Chemistry I Lab	1	CHEM 101 (co)
CEN 498	Final Year Project I	1	ENGL 206
CEN 499	Final Year Project II	3	CEN 498
MATH 201	Calculus and Analytic Geometry III	3	MATH 102
MATH 202	Differential Equations	3	MATH 201
MATH 211	Discrete Mathematics	3	MATH 100
MATH 215	Linear Algebra and Numerical Techniques	3	MATH 102
PHYS 102	General Physics II	3	PHYS 101
PHYS 102L	General Physics II Lab	1	PHYS 102 (co)
COEN 300	Engineering Economy	3	STAT 230
CEN 398	Internship	1	ENGL 206
CEN 434	Cryptography and Computer Security*	3	CEN 340
CEN 494	Digital Image Processing*	3	CEN 240
CEN 460L	Multimedia Lab	1	CEN 494
Total		**69**	

** Aljahiziah Exam*

B) Elective Specialization Requirements – (15) credit hours

Course Code	Course Title	Credits
CEN 403	Special Topics in Computer Engineering	3
CEN 410	Computer-Aided Analysis and Design of VLSI Circuits	3
CEN 420	Computer Graphics	3
CEN 421	Advanced Computer Architecture	3
CEN 422	VLSI for Communications and Signal Processing	3
CEN 424	Digital Systems Testing	3
CEN 425	Advanced Embedded Systems	3
CIT 350	Database Systems	3
CEN 432	Design and Analysis of Algorithms	3
CEN 441	Information Theory	3
CEN 442	Coding Theory	3
CEN 450	Client-Server Computing	3
CEN 451	Internet Engineering	3
CEN 452	Web Server Design and Programming	3
CEN 453	Multimedia and Networking	3
CEN 454	Pervasive Computing Systems and Applications	3
CEN 491	Digital Signal Processing	3
CEN 493	Neural Networks	3
CSC 487	Computer Security	3
CSC 488	System Programming	3

Study Plan (158 Credits)

Year I

First Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 100	General English	3	
MATH 100	Mathematics I	3	
IT 100	Information Technology	3	
ARAB 101	Basic Academic Arabic	3	
SOCS 101	Islamic Civilization I	3	
	Total Credits	**15**	

Second Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 101	Basic Academic English I	3	ENGL 100
STAT 100	Introduction to Probability and Statistics	3	MATH 100
ARAB 201	Advanced Academic Arabic	3	ARAB 101
CSC 100	Introduction to Computing	3	IT 100
PHYS 101	General Physics I	3	MATH 100
PHYS 101L	General Physics I Lab	1	PHYS 101 (co)
	Total Credits	**16**	

Year II

First Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 102	Basic Academic English II	3	ENGL 101
MATH 101	Calculus I	3	MATH 100
PHYS 102	General Physics II	3	PHYS 101
PHYS 102L	General Physics II Lab	1	PHYS 102 (co)
CSC 102	Computer programming	3	CSC 100
CSC 102L	Computer programming Lab	1	CSC 102 (co)
PHE 101	Physical and Health Education	1	
	Total Credits	**15**	

Second Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
MATH 102	Calculus II	3	MATH 101
MATH 211	Discrete Mathematics	3	MATH 100
ENGL 203	Advanced Academic English I	3	ENGL 102
CSC 212	Algorithms and Data Structures	3	CSC 102
CEN 220	Logic Design	3	CSC 100
CEN 220L	Logic Design Lab	1	CEN 220 (co)
	Total Credits	**16**	

Year III

First Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
CHEM 101	General Chemistry I	3	MATH 100
CHEM 101L	General Chemistry I Lab	1	CHEM 101 (co)
MATH 201	Calculus and Analytic Geometry III	3	MATH 102
CEN 210	Electric Circuits I	3	PHYS 102
CEN 210L	Electric Circuits I Lab	1	CEN 210 (co)
CEN 221	Computer Organization	3	CSC212
CEN 221L	Computer Organization Lab	1	CEN 221 (co)
	Total Credits	**15**	

Second Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
STAT 230	Probability and Statistics	3	STAT 100
CEN 230	Electric Circuits II	3	CEN 210
CEN 240	Signal and Systems	3	CEN 230 (co)
CEN 301	Electronics	3	PHYS 102
CEN 301L	Electronics Lab	1	CEN 301 (co)
CEN 320	Computer Architecture	3	CEN 221
	Total Credits	**16**	

Year IV

First Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
MATH 202	Differential Equations	3	MATH 201
ENGL 206	Technical Writing	3	ENGL 102
COEN 300	Engineering Economy	3	STAT 230
CEN 250	Communication Systems	3	CEN 240
CEN 321	Embedded Systems	3	CEN 220
CEN 322L	Digital Systems Lab	1	CEN 321 (co)
	Total Credits	**16**	

Second Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
MATH 215	Linear Algebra and Numerical Techniques	3	MATH 102
CSC 382	Software Engineering	3	CSC 212
CEN 340	Computer Networks	3	CEN 240
CEN 350	Digital Integrated Circuits	3	CEN 301
CSC 372	Operating Systems	3	CEN 221
CEN 340L	Networking Lab	1	CEN 340 (co)
	Total Credits	**16**	

Summer Semester (1 Credit Hour)

Course	Title	Credits	Prerequisites
CEN 398	Internship	1	ENGL 206
	Total Credits	1	

Year V

First Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
CEN 434	Cryptography and Computer Security	3	CEN 340
CSC 492	Computing Ethics	3	Advisor consent
CEN 498	Final Year Project I	1	Senior Standing
	Free Elective	3	
	Computer Engineering Elective 1	3	
	Computer Engineering Elective 2	3	
	Total Credits	**16**	

Second Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
CEN 494	Digital Image Processing	3	CEN 240
CEN 460L	Multimedia Lab	1	CEN 494 (co)
CEN 499	Final Year Project II	3	CEN 498
	Computer Engineering Elective 3	3	
	Computer Engineering Elective 4	3	
	Computer Engineering Elective 5	3	
	Total Credits	**16**	

Total Program Credits	**158**	

Course Description

A) Required Courses:

CEN 210 Electric Circuits I 3(3, 1, 0)

Prerequisite: PHYS 102

A course on fundamentals of electric circuits; basic elements and laws; independent and dependent sources; techniques of circuit analysis: node voltage, mesh current, and source transformation; circuit theorems: superposition, Thevenin and Norton equivalents; inductors, capacitors, mutual inductance, and transformers; steady-state AC circuits; power calculations; circuit simulation using circuit simulators.

CEN 210L Electric Circuits Laboratory 1(0, 0, 2)

Co-requisite: CEN 210

This laboratory course covers passive electronic components; laboratory instruments; voltage-divider circuits; sources and Thevenins's theorem. Simulation using circuit simulators.

CEN 220 Logic Design 3(3, 1, 0)

Co-requisite: CSC 100

A course that covers number systems and codes, switching algebra; combinational circuit analysis, synthesis, and practice; minimization methods; sequential logic design principles; latches and flip-flops, clocked synchronous state machines, designing state machines using state tables and state diagrams; introduction to the VHDL hardware description language.

CEN 220L Logic Design Lab 1(0, 0, 2)

Co-requisite: CEN 220

This laboratory course covers digital logic design. Experiments cover hardware design tools and technologies: hardware description language, and high-level synthesis.

CEN 221 Computer Organization and Assembly Language 3(3, 1, 0)

Co-requisite: CSC 212

This is an introductory course in computer organization and architecture. Topics include basic hardware and software structure, addressing methods, program control, processing units, I-O organization, arithmetic and logic units, main-memory organization, peripherals, microprocessor families, CSIC and RISC architectures, and multiprocessors. Assembly language is used as an aid to studying computer organization.

CEN 221L Computer Organization and Assembly Language Lab 1 (0, 0, 2)

Co-requisite: CEN 221

This Lab complements the contents of CEN 221L.

CEN 230 Electric Circuits II 3(3, 1, 0)

Prerequisite: CEN 210

A course on Laplace transform and its use in circuit analysis; s-domain representation; network functions; transient response of RC, RL, and RLC circuits; frequency-selective circuits; Bode plots; two-port networks; ideal op-amp; active filters; circuit simulation.

CEN 240 Signals and Systems 3(3, 1, 0)

Co-requisite: CEN 250

This course introduces students to the fundamental ideas of signals and system analysis. The topics covered in include basic properties of signals and systems, classifications of signals and systems, typical signals, the processing of signals by linear systems, impulse response, Fourier series and transforms sampling, and discrete-time processing of continuous-time signals. This course should serve as a central building block for students interested in further studying information processing: image processing, communications, control, machine learning, and finance.

CEN 250 Communication Systems 3(3, 1, 0)

Prerequisite: CEN 240

This course introduces principles of data and computer communications at the physical layer; analog to digital conversion and pulse-coded modulation; transmission and reception of digital signals; digital modulation; performance of digital communication systems in the presence of noise and inter-symbol interference; and equalization.

CEN 301 Electronics 3(3, 1, 0)

Prerequisite: PHYS 102

This course covers semiconductors: PN junctions; diodes and diode circuits; field effect transistor; MOS transistor and applications such as amplifier and switch; bipolar junction transistor and applications such as amplifier and switch; and circuit design using circuit simulators.

CEN 301L Electronics Laboratory 1(0, 0, 2)

Co-requisite: CEN 301

An introductory experimental laboratory that explores the design, construction, and debugging of analog electronic circuits. This subject covers diodes, transistors, JFETs, op-amps, and basic analog circuit design as applied to audio and radio frequency circuits.

CEN 320 Computer Architecture 3(3, 1, 0)

Prerequisite: CEN 221

Study of computer architecture from classical to advanced perspectives; explores architectural characteristics of modern computer systems such as performance, instruction sets, assemblers, data- paths, pipelining, caching, memory management, I/O considerations, multiprocessing, and other advanced systems.

CEN 321 Embedded Systems 3(3, 1, 0)

Prerequisite: CEN 220

Implementation of microprocessors and microcontrollers in embedded digital computer systems; topics include architecture, operations, software; hardware/software design methodology; interfacing of microcomputers to peripherals or other computers for purposes of data acquisition, device monitoring and control, and other communications.

CEN 322L Digital Systems Laboratory 1(0, 0, 2)

Co-requisite: CEN 321

This laboratory course covers digital systems design. Experiments cover hardware design tools and technologies: hardware description language, high-level synthesis, ASIC and FPGA design flow; and hardware/software co-design.

CEN 340 Computer Networks 3(3, 1, 0)

Prerequisites: CEN 240

This course presents the foundations of computer networks. It includes a top-down view of the layered architectural elements of communication systems: Application Layer, Transport Layer, Network Layer, and the Link Layer. In particular, the emphasis is on the Internet protocols, TCP/IP, client/server systems, packet switching, protocol stacks, queuing theory, application protocols, socket programming, remote service calls, reliable transport (Error detection and recovery, multimedia networking with quality of service and multicasting), UDP, and security.

CEN 340L Networking Laboratory 1(0, 0, 2)

Co-requisite: CEN 340

This laboratory course covers the technologies and protocols of the Internet. The experiments cover the Internet Protocol (IP), Address Resolution Protocol (ARP), Internet Control Message Protocol (ICMP), User Datagram Protocol (UDP) and Transmission Control Protocol (TCP), the Domain

Name System (DNS), routing protocols (RIP, OSPF, BGP), network address translation (NAT), dynamic host configuration (DHCP), network management protocols (SNMP), and IP multicast.

CEN 350 Digital Integrated Circuits 3(3, 0, 1)

Prerequisite: CEN 301

Study of basic methods of digital integrated circuit design; emphasis will be on structured design methodologies for MOS systems with a focus on performance considerations and design methodologies for VLSI IC chips; VLSI CAD tools are used to design and simulate a small CMOS chip.

CEN 398 Internship 1(0, 1, 0)

Prerequisite: ENGL 206

This is an eight to twelve-week professional training course in computer engineering.

CEN 434 Cryptography and Computer Security 3(3, 1, 0)

Prerequisite: CEN 340

Overview of encryption and computer security; classical encryption techniques, block ciphers and the data encryption standard, finite fields, advanced encryption standard, confidentiality using symmetric encryption, public-key cryptography, key management, hash and MAC algorithms, digital signatures; authentication applications, intruders, and malicious software.

CEN 494 Digital Image Processing 3(3, 1, 0)

Prerequisite: CEN 240

Two-dimensional signals and systems; image formation and perception; representation, coding, filtering restoration, and enhancements; feature extraction and scene analysis; introduction to computer vision.

CEN 460L Multimedia Laboratory 1(0, 0, 2)

Co-requisite: CEN 494

This laboratory course covers the technologies used in multimedia storage and communications. Multimedia formats for voice, music, and video are covered. Experiments also cover coding, streaming, and quality of service for multimedia applications.

CEN 498 Final Year Project I 1 (0, 1, 0)

Prerequisite: ENGL 206

A supervised project in groups of normally three students aimed at providing practical experience in some aspect of computer engineering. Students are expected to complete a literature survey, project specification, and critical analysis, and to acquire the necessary material needed for their intended end product.

CEN 499 Final Year Project II 3 (0, 3, 0)

Prerequisite: CEN 498

A course that seeks to impart in students the skill to integrate the knowledge gained in different courses by asking them to deliver a product that has passed through the design, analysis, testing, and evaluation stages. This course includes the production of a professional report, design process and outcome, implementation and testing, verification and validation, and critical appraisal of the project.

B) Elective Courses:

CEN 403 Special Topics in Computer Engineering 3(3, 0, 0)

Prerequisite: Advisor consent

This course covers contemporary topics of interest to students.

CEN 410 Computer-Aided Analysis and Design of VLSI Circuits 3(3, 1, 0)

Prerequisite: CEN 350

This course covers circuit and logic simulation; timing analysis and verification; testing and fault simulation; logic and high-level synthesis; and physical design automation.

CEN 420 Computer Graphics 3(3, 1, 0)

Prerequisite: CSC 102, ELEE 230

A course on interactive graphics; graphics hardware; graphical input devices; windowing; clipping; viewports; zooming, geometrical transformations (2D and 3D); data structures; advanced raster display architectures; raster algorithms; special graphics techniques; and applications.

CEN 421 Advanced Computer Architecture 3(3, 1, 0)

Prerequisite: CEN 320

A course that focuses on the allocation of hardware and software resources in solving large-scale computing problems, with emphasis on the relationships between hardware organization, system programming, and language support in the evolution of advanced computer architectures.

CEN 422 VLSI for Communications and Signal Processing 3(3, 1, 0)

Prerequisite: CEN 350

This course introduces concepts in the design and implementation of digital signal processing systems using integrated circuits. The main emphasis is on the architectural exploration, design and optimization of signal processing systems for communications. Algorithm, architecture, and circuit design techniques will be introduced that enable joint optimization across the algorithmic, architectural and circuit domains.

CEN 423 Reconfigurable Computing 3(3, 1, 0)

Prerequisite: CEN 320

A course dealing with the design issues pertaining to the implementation of application specific architectures using the reconfigurable computing paradigm allowing the same circuit to be reused in order to run different applications. Emphasis will be on the systematic design of reconfigurable computing platforms that exploit a high degree of parallelism.

CEN 424 Digital Systems Testing 3(3, 1, 0)

Prerequisite: CEN 220

A course on digital systems testing and testable design; test economics, fault modeling, logic and fault simulation, testability measures, test generation for combinational and sequential circuits, memory test, delay test, scan design, built-in self-test and boundary scan.

CEN 425 Advanced Embedded Systems 3(3, 1, 0)

Prerequisite: CEN 321

This course covers embedded hardware and software design; system design process requirements: analysis, specification, hardware/software co-design, testing; Embedded computing platforms: general- and special-purpose processors, hardware accelerators, systems-on-a-chip, intellectual property (IP) core-based design, embedded networks; Software design tools and technologies: CAD tools, compilers, and assemblers. Hardware design tools and technologies: hardware-description languages, high-level synthesis tools, ASIC and FPGA design flows; Real-time operating systems: multiple tasks and processes, context switching, task scheduling, inter-process communication mechanisms.

CEN 426 Computer System Analysis 3(3, 1, 0)

Prerequisite: CEN 320

This course focuses on the development of analytical models of computer systems and application of such models to performance evaluation. Topics covered include scheduling policies, paging algorithms, multi-programmed resource management, and queuing theory.

CEN 430 Database Systems 3(3, 1, 0)

Prerequisite: CEN 330

A course that covers the nature and purposes of database systems and an introduction to data modeling: entity relationship model, relational model with relational algebra, relational calculus and SQL; integrity constraints; file organization and index files; and normalization.

CEN 431 Distributed and Object Database Systems 3(3, 1, 0)

Prerequisite: CEN 430

Fragmentation, replication and allocation; strategies used in executing distributed queries subject to given criteria and the commit protocols for managing transactions in a distributed environment; parallel database implementations and the design of object database management systems; designing distributed database systems using a design project that requires the implementation of low level functionality associated with the functions of distributed database system.

CEN 432 Design and Analysis of Algorithms 3(3, 1, 0)

Prerequisite: CSC 212

Sorting algorithms including merge-sort, quick-sort, and counting-sort; median and order statistics algorithms; sorting lower bound; divide-and-conquer design strategy; polynomial and matrix multiplication algorithms; balanced search trees; hash tables; augmenting data structures; number-theoretic algorithms; dynamic programming; greedy algorithms; graph algorithms including graph traversal algorithms and applications, minimum spanning tree, shortest path algorithms; distributed algorithms; introduction to NP-completeness and intractability.

CEN 433 Advanced Topics in Algorithms 3(3, 1, 0)

Prerequisite: CEN 432

General principles of algorithm design and analysis; linear programming; randomized algorithms; advanced graph algorithms; NP-completeness; introduction to complexity theory; approximation algorithms; number-theoretic algorithms; selected topics.

CEN 435 Optimizing Compilers 3(3, 1, 0)

Prerequisites: CSC 212, CEN 320

This course covers theoretical and practical aspects of building modern optimizing compilers. Topics: intermediate representations, basic blocks and flow graphs, data flow analysis, partial evaluation and redundancy elimination, loop optimizations, register allocation, instruction scheduling, and inter-procedural analysis. Students will implement significant optimizations within the framework of a modern research compiler.

CEN 441 Information Theory 3(3, 1, 0)

Prerequisites: CEN 240

This course introduces the field of information theory and its applications to communications theory, computer science, statistics, and probability theory. Covering all the essential topics in information theory, we introduce the basic quantities of entropy, relative entropy, and mutual information, and show how they arise as natural answers to questions of data compression, channel capacity, rate distortion, and hypothesis testing; Shannon's fundamental coding theorem.

CEN 442 Coding Theory 3(3, 1, 0)

Prerequisites: STAT 230, MATH 215

This course introduces the theory of error-correcting codes. The course will focus on results of asymptotic or algorithmic significance. Topics include construction and existence results for error-correcting codes; limitations on the combinatorial performance of error-correcting codes; BCH codes, Reed-Solomon codes; low density parity check codes; algebraic geometric codes; Turbo codes; and decoding algorithms; unique and soft decoding; applications in computer engineering such as computer storage, compact disk player, satellite communications, bandwidth-limited systems.

CEN 447 Queuing Theory 3(3, 1, 0)

Prerequisite: STAT 230, CEN 340

Poisson counting and renewal processes; Markov chains and decision theory, branching processes, birth death processes, and semi-Markov processes; simple Markovian queues, networks of queues, general single and multiple-server queues, bounds and approximations.

CEN 450 Client-Server Computing 3(3, 1, 0)

Prerequisite: CEN 340

Internet and intranet technologies; the client-server model of interaction; design and implementation of clients and servers; interactive and concurrent servers; distributed computing; application gateways; design project.

CEN 451 Internet Engineering 3(3, 1, 0)

Prerequisite: CEN 340

Examining major protocols used in the Internet: IP, ICMP, TCP, UDP; new technologies introduced on the Internet: IP Multicast, Mobile IP, IPv6, VPNs, and quality of service; routing on the Internet; network security and firewall design; overview of the application protocols: SMTP, HTTP, RTP, and SNMP.

CEN 452 Web Server Design and Programming 3(3, 1, 0)

Prerequisite: Advisor consent

Major technologies used in building Web servers. Alternate versions are to be given each year: The Windows-based IIS Server and the Linux-based Apache server. For IIS, ASP.NET along with C# will be used for programming Web servers. For Apache, PHP will be the language of choice. The course starts with a fast track on client programming, the HTTP protocol, SQL database servers, and XML programming.

CEN 453 Multimedia and Networking 3(3, 1, 0)

Prerequisite: CEN 340

Multimedia topics: system requirements, performance requirements, representation and compression; Multimedia networking is emphasized by discussing multicasting, streaming, multimedia networking protocols and quality of service-based traffic management protocols; synchronization, VoIP, and Internet2; Multimedia networking applications are designed and implemented as student projects.

CEN 454 Pervasive Computing Systems and Applications 3(3, 1, 0)

Prerequisite: Senior standing

Technologies involved in integrating front-end mobile devices into local and global networks; emphasis is placed on the programmability and networking of mobile phones, PDAs, and Pocket PCs; hands-on experience involves programming in Java2 ME, C/C++ for Palm OS, and NET Compact Framework for Windows CE; general coverage of underlying technologies and standards: XML, WAP, UMTS, GPRS, Bluetooth, and Jini.

CEN 491 Digital Signal Processing 3(3, 1, 0)

Prerequisite: CEN 240

Revision of signals, systems, and transforms; design of Digital Filters: FIR and IIR; sampling and reconstruction of signals; multi-rate signal processing with applications; effects of finite word length; discrete random signals and Spectral Estimation; introduction to 2D signal and image processing.

CEN 493 Neural Networks 3(3, 1, 0)

Prerequisite: Senior standing

Perceptron, Madeline, backpropagation, and adaptive neural networks; transformation by layered networks, statistical neuro-dynamics, associative memory, and neural learning; applications to functional approximations, signal filtering, and pattern classification.

COLLEGE OF ENGINEERING

COLLEGE OF ENGINEERING

Officers

Acting Dean:	Khaldoon Bani-Hani
Professors:	Abdallah Malkawi, Khaldoon Bani-Hani, Sameer Bataineh, Jamal Nazzal, Ali Eyadeh
Associate Professors:	Abdullah Qudah, Aboelkasim Diab, Mohammed Eldosoky, Abdallah Alali, Nadeem Shbeeb
Assistant Professors:	Jamal Nejem, Ali Ramadan, Hossam El-Sayed, Ayedh Al Qahtani, Ali Shetwi, Ammar AlKahtani, Abdelnasser Sharkawy
Lecturers:	Mohammad Akhtar, Mastour Alnomasi

Vision

"To be a beacon of engineering excellence in the Kingdom of Saudi Arabia and beyond, shaping a future driven by innovation, research, and societal impact."

We envision a College of engineering that:

- Educates future-ready engineers
- Pioneers cutting-edge research and development
- Fosters a culture of innovation and entrepreneurship
- Collaborates for impact
- Embraces sustainability
- Serves as a role model for the region

We believe that our College of Engineering has the potential to be a driving force in shaping the future of the Kingdom and the world. By nurturing talent, fostering innovation, and collaborating for impact, we will empower our students to become the engineers who build a better tomorrow.

Mission

To ignite the passion for engineering excellence, equipping our students with the knowledge, skills, and values to become transformative leaders who solve global challenges, drive innovation, long life learning and community engagement, and build a sustainable future for the Kingdom of Saudi Arabia and the world.

We are committed to:

- Providing a rigorous and dynamic learning environment
- Empowering ethical and responsible engineers
- Fostering collaboration and entrepreneurship
- Conducting cutting-edge research
- Engaging with our community
- Celebrating diversity and inclusion

Core Values

The main core values that guide the decisions and actions at the college of engineering are:

1. Academic excellence
2. Integrity and Ethics
3. Creativity and Innovation
4. Community Engagement and Service
5. Sustainability and Environmental Stewardship

College Objectives

1. Graduate Employable Engineers:
    - Equip graduates with the technical knowledge, skills, and problem-solving abilities to excel in the dynamic engineering job market.
    - Foster industry partnerships and internship opportunities, providing practical experience and building career connections.
    - Offer career guidance and mentorship programs, preparing graduates for professional success and lifelong learning.
2. Conduct Groundbreaking Research:
    - Establish FBSU as a leading research hub in the region, attracting top talent and funding for critical engineering challenges.
    - Promote interdisciplinary collaboration, fostering innovation and tackling complex problems with diverse perspectives.
    - Translate research findings into tangible solutions for the Kingdom's development and global impact.
3. Cultivate Pioneering Leaders:
    - Nurture creativity and entrepreneurial spirit, empowering students to develop game-changing ideas and turn them into reality.
    - Provide access to venture capital and incubation facilities, supporting student startups and driving economic growth.
    - Foster a culture of risk-taking, resilience, and leadership, preparing graduates to navigate the ever-changing world of engineering.
4. Bridging Gaps with Community Engagement:
    - Serve as a vital resource for the local and broader community, addressing their needs through engineering expertise.
    - Implement outreach programs, workshops, and community projects, fostering collaboration and mutual understanding.
    - Develop sustainable solutions for local challenges, improving infrastructure, promoting environmental awareness, and enhancing quality of life.
5. Set the Standard for Excellence:
    - Continuously strive for academic rigor and development, benchmarking against international engineering programs.

- Recruit and retain top-tier faculty, providing them with resources and support for teaching, research, and professional development.
- Foster a culture of continuous improvement, regularly evaluating and adapting programs to meet evolving industry needs and global trends.

Academic Programs

Currently, the College of Engineering offers the following undergraduate and graduate programs:

1. Bachelor in Civil Engineering (BCE)
2. Bachelor in Electrical Engineering (BEE)
3. Bachelor in Renewable Energy Engineering (BREE)
4. Bachelor in Mechanical Engineering (BME)
5. Master's in Electrical Engineering (MEE)
6. Master's in Civil Engineering (MCE)

Admission Requirements

Applicants to the college of engineering are screened and the eligible applicants are selected for admission into the first year of engineering program they choose. Special attention is given to the following aspects:

1. Level of proficiency in English
2. Level of proficiency in mathematics and IT skills
3. Academic performance in the subject matters related to engineering

In particular, the college of Engineering considers the following Admission Requirements:

1. "Qudurat" test score of at least 65%; also applicable to applicants from Technical Colleges who had the "Qudurat" test.
2. Weighted average of both the Secondary School Average and the "Qudurat" test score must be at least 70% (40% for Secondary School Average and 60% for "Qudurat").
3. For applicants from Technical Colleges, the weighted average of both the Technical College Average and the "Qudurat" exam score must be at least 65% (60% for Technical College Average and 40% for "Qudurat"). If the applicant does not have a "Qudurat" score, the admission is decided on both the Technical College GPA and the Secondary School score (60% for the Technical College and 40% for the Secondary School Average), where the weighted average must be at least 70%.

Graduation Requirements

The specific program requirements for each of the offered programs are shown under the respective department sections. The total number of credit hours required for a bachelor's degree in each of the three programs is:

1. Civil Engineering: 159 credit hours;
2. Electrical Engineering: 159 credit hours;
3. Mechanical Engineering: 158 credit hours.
4. Renewable Energy Engineering 159 credit hours.

University Requirements

Students working towards the bachelor's degrees must complete a total of 37 credit hours in University requirements, which are detailed as follows:

- 6 credit hours of Arabic: ARAB 101 and ARAB 201;
- 15 credit hours of English communication skills: ENGL 100, ENGL 101, ENGL 102, ENGL 203, and ENGL 206;
- 7 credit hours of social and cultural studies: SOCS 101, PHE 101, and a free elective course;
- 3 credit hours of computing for engineers: IT 100;
- 6 credit hours of mathematics: MATH 100 and STAT 100

Course ID	Course Title	Credit Hours	Pre-requisites
ENGL 100	General English	3	
MATH 100	Mathematics I	3	
STAT 100	Introduction to Probability and Statistics	3	MATH 100
IT 100	Information Technology	3	
ARAB 101	Basic Academic Arabic	3	
ARAB 201	Advanced Academic Arabic	3	ARAB 101
ENGL 101	Basic Academic English I	3	ENGL 200
ENGL 102	Basic Academic English II	3	ENGL 101
ENGL 203	Advanced Academic English I	3	ENGL 102
ENGL 206	Technical Writing	3	ENGL 102
SOCS 101	Islamic Civilization I	3	
PHE 101	Physical and Health Education	1	
	Free elective	3	
	Total	**37**	

- A Free Elective Course: 3 credit hours from the following list:

Course ID	Course Title	Credit Hours	Pre-requisites
FREN 101	Basic French I	3	
SOCS 201	Islamic Civilization II	3	SOCS 101
SOCS 202	World Civilization	3	
SOCS 203	History of the Kingdom of Saudi Arabia	3	
ASTR 150	Introduction to Astronomy	3	
CHEM 150	Chemistry & Society	3	

College requirements

The College of Engineering requirements for the bachelor's degrees include 40 credit hours detailed as follows:

- 11 credit hours in sciences: PHYS 101, PHYS 102, PHYS 103L, and CHEM 101/ 101L;
- 18 credit hours in mathematics and statistics: MATH 101, MATH 102, MATH 201, MATH 202, MATH 215, and STAT 230;
- 6 credit hours in Engineering Programming: CSC 101 and ELEE 230;
- 1 credit hour in Engineering Drawings: CIVE 205;
- 3 credit hours in Engineering Economy: COEN 300;
- 1 credit hour in Engineering Ethics: COEN 401;

Course ID	Course Title	Credits	Pre- requisites
PHYS 101	General Physics I	3	
PHYS 102	General Physics II	3	PHYS 101
PHYS 103L	Physics Lab	1	(co) PHYS 102
CHEM 101	General Chemistry	3	
CHEM 101L	General Chemistry Lab	1	(co) CHEM 101
MATH 101	Calculus I	3	STAT 100
MATH 102	Calculus II	3	MATH 101
MATH 201	Calculus and Analytic Geometry III	3	MATH 102
MATH 202	Differential Equations	3	MATH 102
MATH 215	Linear Algebra and Numerical Techniques	3	MATH 202
STAT 230	Probability and Statistics	3	MATH 102
CSC 101	Introduction to Computing for Engineers	3	IT 100
ELEE 230	Programming for Engineers	3	CSC 101
CIVE 205	Engineering Drawing	1	
COEN 300	Engineering Economy	3	(co) STAT 230
COEN 401	Communication Skills and Ethics	1	ENGL 203
	Total	**40**	

Program requirements

The program requirements of each of the offered degrees are detailed in the following sections.

DEPARTMENT OF CIVIL ENGINEERING

Mission

To promote highly competent and socially responsible civil engineers equipped with the knowledge, skills, and values to:

- Design, construct, and maintain sustainable infrastructure: Develop original and sustainable solutions for infrastructure projects.
- Solve complex engineering challenges: Employ critical thinking, problem-solving, and adhering to ethical principles and safety considerations.
- Contribute to the Kingdom's development: Empower graduates to contribute to the Kingdom's infrastructure development, economic growth, and societal advancement, aligning with the Saudi Vision 2030.
- Embrace lifelong learning, collaborate and lead in multidisciplinary teams and demonstrating leadership skills in managing complex projects and fostering teamwork.
- Contribute to the global engineering community: Engage with international engineering organizations and participate in global projects, sharing knowledge and contributing to the advancement of civil engineering worldwide.

Academic Program

Currently, the Department of Civil Engineering offers one undergraduate program:

- Bachelor in civil engineering (BCE) (two tracks)
  - General Civil engineering Track
  - Environmental Engineering Track
- Master of Science in Civil Engineering (MSCE)

BACHELOR OF CIVIL ENGINEERING (BCE) PROGRAM

The Civil Engineering program is designed to grant students a bachelor's degree upon the successful completion of the four-year curriculum.

Program Objectives

The Civil Engineering program is designed to achieve the following objectives:

- Provide students with adequate understanding of the essential prerequisites in theory, design, and basic sciences for a profession in the field of electrical engineering.
- Develop students' skills in the field of electrical engineering to qualify them for the job market.
- Develop students' professional approach to engineering based on a strong sense of community service, teamwork, responsibility, and high ethics.
- Equip students with proper tools to address open research problems in the field of electrical engineering and to pursue graduate studies in international standard universities.

Learning Outcomes

Upon graduation, Bachelor holders in CE will be expected to demonstrate:

Knowledge and Understanding

1- Gain knowledge of mathematics, science, and engineering.
2- Outline engineering problems solutions based on the principles of physical sciences and mathematics.
3- Describe and categorize engineering related contemporary issues.

Skills

4- Solve engineering problems by applying principles of mathematics, science, and engineering.
5- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions.
6- Apply modern techniques and skills to produce solutions in global, economic, environmental, and societal contexts for engineering practice.
7- Acquire and apply life-long learning skills as needed, using appropriate learning strategies.
8- Communicate effectively with a range of audiences.

Values

9- Uphold ethical and professional responsibilities.
10- Function and contribute effectively in a team.

Career Opportunities

As one of the oldest engineering disciplines, Civil Engineering involves planning, designing and executing structural works. The profession deals with a wide variety of engineering tasks including design, supervision and construction activities of public works like roads, bridges, tunnels, buildings, airports, dams, water works, sewage systems, ports etc.; and offers a multitude of challenging career opportunities.

A civil engineer is responsible for planning, designing, constructing and maintaining civil engineering projects. He/she is required to have a high standard of engineering knowledge as well as supervisory and administrative skills. The planning part of his work involves site investigation, feasibility studies, creating solutions to complications that may occur and the actual designing of

structures. He/she has to follow the guidelines of the local government authority and approve his plans accordingly. He/she may prepare cost estimates and set construction schedules; deal with clients, architects, contractors etc.; and supervise the work according to standards.

Demand for civil engineers has been consistently high during the last decades particularly in the Gulf region where engineers have been involved primarily in large development projects. The emerging construction activity offers ever increasing and expanding opportunities for civil engineers. Also the emerging of relatively new fields in Sustainability (green buildings and renewable energy systems), smart cities (using technology to improve quality of life, sustainability, and efficiency), and resilient infrastructure (handling natural disasters, prime examples include climate change, and earthquakes)

The Civil Engineering Department is committed to providing its students with meaningful, up-to-date skills and knowledge that will allow them to pursue successful engineering careers within Tabuk and across the Gulf region.

Civil Engineering Laboratory Facilities

The Civil Engineering Department is furnished with high quality state-of-art laboratories that support research and teaching activities for Structural, Environmental, Hydrology, Surveying and Highway Engineering Programs.

These laboratories extend over an area exceeding 610 sq. m and are manned with highly qualified and well-trained personnel. Furthermore, most of the lab equipment are support advanced computerized data acquisition systems.

The Department hosts the following five major laboratories:

1. Soil Mechanics Lab; The tests usually covered include the following: Determination of water content, Determination of grain size distribution, Determination of Atterberg limits, Compaction tests, Shear strength tests, Permeability tests, Consolidation tests, Specific gravity tests, and Soil classification tests
2. Material Lab; The tests usually covered include the following: Slump test, Compressive strength test, Split tensile strength test, Mortar tests, Marshall stability test, Marshall flow test, Sieve analysis
3. Surveying Lab; The tests usually covered include: Distance measurement by taping and ranging, Determining elevations using level, Profile and cross section survey , Horizontal and vertical angles measurement, Surface area calculations and field measurements , Setting up Total Station, Setting out measurements using Total Station, Traversing and coordinate computations, and Measuring Areas using Planimeter.
4. Fluid Mechanics and Hydraulics Laboratory; The tests usually covered include: Determination of the friction factor for the pipes, Determination of the coefficient of discharge, contraction and velocity of an orifice, Verification of Bernoulli's Theorem, Determination of Critical Reynolds number for a pipe flow, Determination of the minor losses due to sudden enlargement, sudden contraction and bends, Determination of the velocity distribution in an open channel and to determine the energy and momentum correction factors
5. Environmental Engineering Lab; Collection and distribution of water supply, Water Quality, Wastewater Treatment (BOD and COD), and Environmental pollution.

Curriculum and Program Structure

The curriculum is designed in conformance with the study plan approved by the MOE. It includes courses in basic sciences and mathematics, engineering sciences, engineering design, communication skills, and humanities and social sciences. Lab hands-on experience and emphasis on design are important elements that are integrated throughout the curriculum.

The requirements of the BCE include:

- 35 credit hours of mathematics and basic sciences,
- 87 credit hours of engineering sciences and engineering design,
- 13 credit hours of social sciences and humanities
- 15 credit hours of English language and technical writing courses
- 9 credit hours in Computer and Programming

The curriculum is designed to grant students the bachelor's degree upon the successful completion of the fifth-year program. The first year is shared with all engineering majors in order to allow students to transfer from one major to another without losing any credits earned in the first year.

Final Year Project

As part of their fifth year, students are required to carry out a project and submit a technical report. This project is a substantial piece of work that will require creative activity and original thinking. Students in groups, normally three per group, are supervised while working on a project accounting for four credit hours, extending over a full academic year. The project aims to provide students with a transitional experience from the academic world to the professional world. It is designed to serve as a platform in which CE students in teams engage in a practical design experience requiring the solution of civil engineering design problems. Yet, a student who has already passed a minimum of 90 credits is eligible to register for the Final Year Project.

The objectives of the final year project are:

- To allow students to demonstrate a wide range of the skills learned at the College of Engineering during their course of study by asking them to deliver a complete and original design for a Civil Engineering scheme;
- To encourage work on multidisciplinary projects, where students get to apply material learned in a number of courses;
- To allow students to develop problem solving, analysis, synthesis, evaluation and design skills.
- To encourage teamwork;
- To improve students' communication skills by asking them to produce both a professional report and a professional poster and to give an oral presentation of their work;

The project is important for a number of reasons:

- It is the largest single piece of design work that a student does during his/her bachelor's degree program;
- It is the work that prospective employers will most likely ask students about during an interview;
- It allows students to show a range of the skills they have learned during their course of study.

Practical Training Internship

All engineering students are required to fulfill a 1-credit hour internship after they complete the third year in the program. This graduation requirement entails that each student gains practical training experience with either a company or another academic institution. The internship can be conducted either during the last summer term or in the last regular term, prior to graduation provided that s/he has passed a minimum of 108 credits.

Degree Requirements

To graduate with a bachelor's degree in civil engineering (BCE), students must satisfactorily complete 159 credit hours. The distribution of courses in the proposed study plan is as follows:

University Requirements

Students working towards the bachelor's degree in civil engineering must complete a total of 37 credit hours in University requirements, which are detailed as follows:

- 6 credit hours of Arabic: ARAB 101 and ARAB 201;
- 15 credit hours of English communication skills: ENGL 100, ENGL 101, ENGL 102, ENGL 203, and ENGL 206;
- 7 credit hours of social and cultural studies: SOCS 101, PHE 101, and a free elective course;
- 3 credit hours of computing for engineers: IT 100; and
- 6 credit hours of mathematics: MATH 100 and STAT 100.

College Requirements

The College of Engineering requirements for the bachelor's degree in civil engineering include 40 credit hours detailed as follows:

- 11 credit hours in sciences: PHYS 101, PHYS 102, PHYS 103L, and CHEM 101/ 101L;
- 18 credit hours in mathematics and statistics: MATH 101, MATH 102, MATH 201, MATH 202, MATH 215, and STAT 230;
- 6 credit hours in Engineering Programming: CSC 101 and ELEE 230;
- 1 credit hour in Engineering Drawings: CIVE 205;
- 3 credit hours in Engineering Economy: COEN 300; and
- 1 credit hour in Engineering Ethics: COEN 401.

Program Requirements

Program specialization requirements consist of 82 credit hours: 70 compulsory credit hours, 12 elective credit distributed as follows:

- 70 credit hours for the courses: CIVE 215, CIVE 210, CIVE 211, CIVE 220, CIVE 220L, CIVE 240, CIVE 240L, CIVE 250, CIVE 260, CIVE 260L, CIVE 310, CIVE 320, CIVE 330, CIVE 330L, CIVE 340, CIVE 351, CIVE 360, CIVE 400, CIVE 410, CIVE 412, CIVE 420, CIVE 430, CIVE 460, CIVE 461, CIVE 471, CIVE 472, CIVE 480, CIVE 498, CIVE 499
- Four electives (12) credit hours from the selected civil Engineering track (general Civil Engineering track and Environmental engineering track);

- General Civil Engineering track:

  CIVE 403, CIVE 411, CIVE 421, CIVE 422, CIVE 423, CIVE 431, CIVE 432, CIVE 433, CIVE 434, CIVE 440, CIVE 441, CIVE 443, CIVE 444, CIVE 445, CIVE 446, CIVE 447, CIVE 448, CIVE 450, CIVE 451, CIVE 452, CIVE 453, CIVE 454, CIVE 455, CIVE 456, CIVE 457, CIVE 458, CIVE 462, CIVE 463, CIVE 464, CIVE 465, CIVE 466, CIVE 470

- Environmental Engineering Track:

  CIVE 432, CIVE 448, CIVE 450, CIVE 451, CIVE 452, CIVE 454, CIVE 455, CIVE 456, CIVE 457, CIVE 458, CIVE 459

Study Plan

Year I

First Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 100	General English	3	
IT 100	Information Technology	3	
MATH 100	Mathematics I	3	
ARAB 101	Basic Academic Arabic	3	
SOCS 101	Islamic Civilization I	3	
PHYS 101	General Physics I	3	
	Total Credits	**18**	

Second Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 101	Basic Academic English I	3	ENG 100
STAT 100	Introduction to Probability and Statistics	3	MATH 100
CSC 101	Introduction to Computing for engineers	3	IT 100
PHYS 102	General Physics II	3	PHYS 101
CIVE 205	Engineering Drawings	1	
ARAB 201	Advanced Academic Arabic	3	ARAB 101
PHE 101	Physical and Health Education	1	
	Total Credits	**17**	

Year II

Third Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
ELEE 230	Programming for Engineers	3	CSC 101
MATH 101	Calculus I	3	STAT 100
ENGL 102	Basic Academic English II	3	ENGL 101
CHEM 101	General Chemistry I	3	
CHEM 101L	General Chemistry Lab	1	Co-CHEM 101
CIVE 210	Statics	3	PHYS 101
	Total Credits	**16**	

Fourth Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 203	Advanced Academic English I	3	ENGL 203
MATH 102	Calculus II	3	MATH 101
CIVE 260	Surveying	2	
CIVE 260L	Surveying Lab	1	Co: CIVE 260
CIVE 211	Structural Mechanics	3	CIVE 210
CIVE 220	Engineering Materials	3	CHEM 101, CHEM 101L
	Total Credits	**15**	

Year III

Fifth Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 206	Technical Writing	3	ENGL 102
MATH 201	Calculus and Analytic Geometry III	3	MATH 102
MATH 202	Differential equations	3	MATH 102
CIVE 215	Computer Aided Engineering Drawing	1	CIVE 205
CIVE 220L	Engineering Materials Lab	1	Co-CIVE 220
STAT 230	Probability and Statistics	3	MATH 102
PHYS 103L	Physics Lab.	1	Co-PHYS 102
	Total Credits	**15**	

Sixth Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
MATH 215	Linear algebra and Numerical Techniques	3	MATH 202
CIVE 240	Fluid Mechanics	3	CIVE 211, MATH 202
CIVE 240L	Fluid Lab	1	Co-CIVE 240
CIVE 250	Environmental Engineering	3	CHEM 101
CIVE 310	Structural Analysis I	3	CIVE 211
CIVE 330	Geotechnical Engineering	3	CIVE 211
CIVE 330L	Geotechnical Engineering Lab	1	Co-CIVE 330
	Total Credits	**17**	

Year IV

Seventh Semester (16 Credit Hours)

	Course	Credits	Prerequisites
CIVE 340	Engineering Hydrology	3	CIVE 240
COEN 300	Engineering Economy	3	STAT 230
CIVE 320	Concrete I	3	CIVE 220L, CIVE 211
CIVE 360	Transportation Engineering	3	CIVE 260, STAT 230
COEN 401	Communication skills and ethics	1	ENGL102
CIVE 410	Structural Analysis II	3	CIVE 310
	Total Credits	**16**	

Eight Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
CIVE 420	Concrete II	3	CIVE 320
CIVE 430	Foundation Engineering	3	CIVE 330
CIVE 351	Water and Wastewater Treatment and Lab	3	CIVE 250, CIVE 240L
CIVE 460	Highway Engineering	3	CIVE 360
CIVE 461	Pavement Design	3	CIVE 360
	Total Credits	**15**	

Summer Semester

Course	Title	Credits	Prerequisites
CIVE 400	Internship for CIVE Students	1	Senior, ENGL 206, CIVE 320, CIVE 360
	Total Credits	**1**	

Year V

Ninth Semester (14 Credit Hours)

Course	Title	Credits	Prerequisites
CIVE 471	Quantity Surveying and Cost Estimation	2	COEN 300, CIVE 320
CIVE 472	Contracts and Specifications	2	COEN 400
CIVE 498	Final Year Project I	1	108 credits, CIVE 320, CIVE 360, CIVE 351
CIVE XXX	Specialization Elective	3	
CIVE XXX	Specialization Elective	3	
CIVE XXX	Specialization Elective	3	
	Total Credits	**14**	

Tehth Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
CIVE 412	Steel Design	3	CIVE 310
CIVE 480	Construction Management	3	CIVE 472
CIVE 499	Final Year Project II	3	CIVE 498
CIVE XXX	Specialization Elective	3	
	University Free Elective	3	
	Total Credits	**15**	

Total Program Credits	**159**[2]	

[2] Completion of the Bachelor of Science in Civil Engineering

Course Descriptions

Required Courses

CIVE 205 Engineering Drawing 1(0, 0, 2)

Prerequisite: advisor discretion

Drawing equipment, lettering, Geometric construction, sketching, dimensioning, orthographic projections, points, lines, areas and solids, principal and auxiliary views, skew lines, distances between points, lines and plane surfaces, piercing points, shadow, perspective, surface development, applications.

CIVE 210 Statics 3(3, 0, 0)

Prerequisite: PHYS 101

A course outlining vector mechanics of forces and moments; free-body diagrams; equilibrium of particles and rigid bodies in two and three dimensions; plane and space trusses; frames and machines; axial, shear, and moment diagrams of beams and simple frames; friction; center of gravity and centroid; area moment of inertia; computer applications.

CIVE 211 Structural Mechanics 3(3, 0, 0)

Prerequisite: CIVE 210.

A course on stresses, strains, and stress-strain relationship; tension and compression; torsion of circular bars; bending and shear stresses in beams; combined stresses; stress transformation and Mohr's circle.

CIVE 215 Computer Aided Engineering Drawing 1(0, 0, 2)

Perquisite: CIVE 205

Introduction to Computer Aided Drawing (AutoCAD) Software, Drawing limits, grid setting and drawing aids, coordinate system, Drawing tools (point, line , ray, multi-line, poly-line, polygons, rectangle, arc, circle, ellipse), Modify tools (copy, erase, offset, move, rotate, lengthen, terminate, fillet, chamfer, array), Layers, Zoom, dimensions, text, hatch, isometric drawing.

CIVE 220 Engineering Materials 3(3, 0, 0)

Prerequisite: CHEM 101, CHEM 101L

This course introduces Civil Engineering materials that include cement, aggregates, admixtures, plain concrete, steel, masonry, plastics and polymers. Concrete mix design, concrete curing and durability; construction equipment and technologies; hot and cold weathering concreting.

CIVE 220L Engineering Materials Lab 1(0, 0, 2)

Co-requisite: CIVE 220

Hands-on laboratory experiments to introduce students to testing different materials including cement, aggregates, admixtures, plain concrete, steel, masonry, and plastics.

CIVE 240 Fluid Mechanics 3(3, 0, 0)

Prerequisite: MATH 202, CIVE 210

An introductory course on fluid behavior emphasizing conservation of mass, momentum, and energy and dimensional analysis; study of fluid motion in terms of the velocity field, fluid acceleration, the pressure field, and the viscous effects; applications of Bernoulli's equation, Navier- Stokes, and modeling; flow in ducts, potential flows, and boundary layer flows.

CIVE 240L Fluid Lab 1(0, 0, 2)

Co-requisite: CIVE 240

Hydrostatic, Fluids in motion, Open channel flow, Uniform flow, Non-uniform flow, Flow through pipelines, Flow over weirs and under sluice gates, Hydraulic machinery, Water pumps, Flow water Measurement.

CIVE 250 Environmental Engineering 3(3, 0, 0)

Prerequisite: CHEM 101

A course that introduces the fundamentals of environmental engineering. A screening course of major topics in environmental engineering including water and wastewater, environmental hydrology, environmental hydraulics and pneumatics, air, solid waste, noise, environmental modeling, and hazardous waste.

CIVE 260 Spatial Measurements 2(1, 0, 2)

Prerequisite: MATH 101

A course on the theory of measurements and errors; linear measurements; surveying instruments; leveling; angles, bearings, and azimuths; stadia measurements; traversing–field aspects; traverse computations and adjustment; topographic surveying; triangulation.

CIVE 260L Surveying Lab 2(1, 0, 2)

Co-requisite: CIVE 260

Surveying lab covers the three basic surveying tools – the tape, level and transit/theodolite – along with proper field procedures for basic surveying which include taking field notes, taping and EDM, leveling, bearings and azimuths, topography, and mapping. In addition, more advanced tools such as Total Station is also introduced.

CIVE 310 Structural Analysis I 3(3, 0, 0)

Prerequisite: CIVE 211.

An introductory course covering stability and determinacy of structures; influence lines; deflection of beams and frames by double integration method, moment-area theorems, and conjugate beam; principle of virtual work and applications on beams, frames and trusses; introduction to indeterminate structures; approximate analysis of building frames.

CIVE 320 Concrete I 3(3, 0, 0)

Prerequisite: CIVE 220L, CIVE 211

A course that covers the mechanical properties of concrete materials; ultimate strength theory of flexure and shear; flexural and shear design of beams; service load behavior; bond properties of reinforcing bars; design of solid and ribbed one-way slabs; design of short , slender and bi-axially columns.

CIVE 330 Geotechnical Engineering 3(3, 0, 0)

Prerequisite: CIVE 240

A course on engineering geology, soil classification and index properties; soil structure and moisture; compaction; seepage; effective stress concept; compressibility and consolidation; stress and settlement analysis; shear strength.

CIVE 330L Geotechnical Engineering Lab 1(0, 0, 2)

Co-requisite: CIVE 330

Water content determination, liquid and plastic limits, shrinkage limit, grain size distribution (sieve analysis), hydrometer analysis, compaction, in-situ field density, constant and falling head permeability tests, unconfined compression test, tri-axial test, direct shear test .

CIVE 340 Engineering Hydrology 3(3, 0, 0)

Prerequisite: CIVE 240

Outlining hydrologic cycle; precipitation, evaporation, transpiration, and infiltration; rainfall-runoff analysis; stream flow measurement; hydrograph analysis; frequency analysis; flood routing; simulation models; urban hydrology; hydrologic design.

CIVE 351 Water and Wastewater Treatment and Laboratory 3(2, 0, 2)

Prerequisite: CIVE 240L, CIVE 250

A course that examines the quality and treatment methods of water and wastewater; testing for physical, chemical, and biological parameters.

CIVE 360 Transportation Engineering 3(2, 0, 2)

Prerequisite: STAT 230, CIVE 260

A course that introduces the field of transportation engineering through a presentation of the basics of traffic engineering, traffic flow theory, and pavement design. A laboratory component consists of carefully structured experiments that reinforce students' understanding of the academic concepts and principles.

CIVE 400 Internship for CE Students (1 Credit)

Prerequisite: Summer 4th year and 108 credits

An eight- to twelve-week professional training course in Civil Engineering.

CIVE 410 Structural Analysis II 3(3, 0, 0)

Prerequisite: CIVE 310

A course on the solution of statically indeterminate structures by flexibility (force) and stiffness methods for plane and space trusses and frames introduction to the direct stiffness method; influence lines for indeterminate structures; computer applications.

CIVE 412 Steel Design 3(3, 0, 0)

Prerequisite: CIVE 310

A course that examines loads on structures; philosophies of design: LRFD versus ASD; behavior, analysis, and design (according to AISC) of tension members, bolted connections, welded connections, compression members, and beams.

CIVE 420 Concrete II 3(3, 0, 0)

Prerequisite: CIVE 320

A course that builds upon Concrete I and covers continuous beams; wall footings, concentrically and eccentrically loaded single column footings, and combined footings; staircases; bearing walls; cantilever retaining walls; two-way slabs.

CIVE 430 Foundation Engineering 3(3, 0, 0)

Prerequisite: CIVE 330

A course that covers site investigations; evaluation of data from field and laboratory tests; estimation of stresses in soil masses; applications of principles of soil mechanics to determination of bearing capacity and settlement of spread footings, mats, single piles, and pile groups.

CIVE 460 Highway Engineering 3(3, 0, 0)

Prerequisite: CIVE 360

A course that examines road vehicle performance; principles of geometric design and highways; horizontal and vertical alignment; earthwork; intersections and interchanges; parking facilities; basic traffic models; queuing theory and traffic analysis; travel demand forecasting.

CIVE 461 Pavement Design 3(3, 0, 0)

Prerequisite: CIVE 360

A course examining highway and airport pavement design; flexible and rigid pavement types and wheel loads; stresses in flexible and rigid pavements; pavement behavior under moving loads; soil stabilization.

CIVE 471 Quantity Surveying and Cost Estimation 2(2, 0, 0)

Prerequisite: COEN 300, CIVE 320

Calculation of quantities of concrete elements, steel reinforcement bars, steel structures, brick work, earth work, finishing's (paining, plastering, tiling, etc.), and roads work. Construction cost estimations process, unit rates determination, labor costing, and final pricing.

CIVE 472 Contracts and Specifications 2(2, 0, 0)

Co-requisite: COEN 401

A course on the structure of contract documents, bidding requirements, general and detailed contract specifications, types of contracts, arbitration and legal requirements. Building structural specifications. Building finishing's specification.

CIVE 480 Construction Management 3(3, 0, 0)

Prerequisite: CIVE 472

A course on organizing for construction projects; pre-construction activities; bidding and contracts; fundamentals of construction planning, monitoring, and control; application of construction control tools: CPM, materials management, operations analysis, and quality control.

CIVE 498 Final Year Project I (1 Credit)

Prerequisite: 108 credits, CIVE 320, CIVE 360, CIVE 351

A chosen design topic of wide range of civil engineering application including structural, geotechnical, transportation, highway, material, hydrologic, water resources and environment and preparation of a detailed execution program for CIVE 499, through Define the project, State the objectives, Complete a literature survey, Set project specifications and master plan, Select a design method or experimental matrix.

CIVE 499 Final Year Project II (3 Credits)

Prerequisite: CIVE 498

A supervised project in groups of normally three students aimed at providing practical design experience in a civil engineering application.

COEN 300 Engineering Economy 3(3, 0, 0)

Prerequisite: STAT 230 (co)

A course that covers principles, basic concepts and methodology for making rational decisions in the design and implementation of real engineering projects; time value of money, depreciation, comparing alternatives, effect of taxes, inflation, capital financing and allocation, and decision under uncertainty.

COEN 401 Engineering Ethics 1(1, 0, 0)

Prerequisite: ENGL 203

A course on engineering ethics covering responsibility in engineering; framing the moral problem; organizing principles of ethical theories; computers, individual morality, and social policy; honesty, integrity, and reliability; safety, risk, and liability in engineering; engineers as employees; engineers and the environment; international engineering professionalism; and future challenges.

Elective Courses

A) Elective Courses - *General*

CIVE 403 Special Topics in Civil Engineering 3(3, 0, 0)

Prerequisite: discretion of advisor, 80 credits

Any selected topic in the state-of-the-art in Civil Engineering.

CIVE 411 Bridges 3(3, 0, 0)

Prerequisites: CIVE 320

A course that discusses types of bridges; influence lines; loads and their distribution on bridges; serviceability of bridges; methods of design of bridge deck, superstructure, and substructure.

CIVE 421 Special Topics in Concrete 3(3, 0, 0)

Prerequisite: CIVE 420

A course that reviews reinforced concrete design; wind load on structures; seismic design of structures; design of shear walls; brackets, corbels, and deep girders; torsion in concrete members; circular, rectangular, and elevated water tanks; spherical, conoidal, and ellipsoidal domes.

CIVE 422 Pre-Stressed Concrete 3(3, 0, 0)

Prerequisite: CIVE 320

A course on materials characteristics; prestress losses; working strength design procedures; composite construction; ultimate flexural strength and behavior; shear design; continuous pre-stressed concrete members.

CIVE 423 Strength and Rehabilitation of Concrete Structural Systems 3(3, 0, 0)

Prerequisite: CIVE 430

A course on assessment of structural deficiency using analytical and field test methods; strengthening materials; strengthening of structural members in flexure, shear, and axial load; upgrading of gravity load-designed members for earthquake load resistance.

CIVE 431 Applied Foundation Engineering 3(3, 0, 0)

Prerequisite: CIVE 330

A course on braced excavations, retaining structures, deep foundations, slope stability, and computer applications.

CIVE 432 Environmental Geotechnics 3(3, 0, 0)

Prerequisite: CIVE 330

A course on geotechnical practice in environmental protection and restoration; methods of soil and site characterization for sifting of waste repositories and site restoration; influence of physical and chemical processes in soils on the evaluation of contaminant distribution; design of waste containment systems including landfills, slurry walls, and soil stabilization; the applicability and use of geosynthetics; technologies for site restoration and cleanup.

CIVE 433 Soil and Site Improvement 3(3, 0, 0)

Prerequisite: CIVE 330.

A course that covers compaction, admixture stabilization, foundation soil treatment, reinforced soil and composite materials, and material sites reclamation.

CIVE 434 Geotechnical Earthquake Engineering 3(3, 0, 0)

Prerequisite: CIVE 330

A course on causative mechanisms of earthquake, earthquake magnitudes, ground motion; influence of soil conditions on site response; seismic site response analysis; evaluation and modeling of dynamic soil properties; analysis of seismic soil-structure interaction; evaluation and mitigation of soil liquefaction and its consequences; seismic code provisions and practice; seismic earth pressures seismic slope stability and deformation analysis, seismic safety of dams and embankments, seismic performance of pile foundations, and additional current topics.

CIVE 440 Hydraulics and Laboratory 3(2, 0, 2)

Prerequisite: CIVE 240

Flow in conduits, flow in open channels, flow measurements, and laboratory experiments.

CIVE 441 Hydraulic Structures 3(3, 0, 0)

Prerequisite: CIVE 240

A course that covers closed conduit flow, water distribution systems, transient analysis, open channel flow, flood control, culvert hydraulics, design of various hydraulic structures.

CIVE 443 Groundwater Hydrology 3(3, 0, 0)

Prerequisite: CIVE 340

A course that deals with properties of groundwater, groundwater movement, general flow equations, steady-state well hydraulics, seepage forces, unsteady well hydraulics, infiltration, and groundwater modeling.

CIVE 444 Hydraulics of Open Channels 3(3, 0, 0)

Prerequisite: CIVE 240

A course that examines gradually varied flow theory and analysis, spatially varied flow, and numerical modeling of unsteady flow in open-channels.

CIVE 445 Coastal Engineering 3(3, 0, 0)

Prerequisite: CIVE 240, CIVE 250

A course on small-amplitude wave theory, finite-amplitude wave theory, conoidal waves, solitary wave theory, wave refraction, diffraction, and reflection, wave forces, and design of maritime structures (e.g., breakwaters).

CIVE 446 Transport Phenomena in Surface and Subsurface Waters 3(3, 0, 0)

Prerequisite: CIVE 240 and CIVE 250

A course on advection, diffusion, and dispersion of pollutants; transport in rivers and estuaries; transport in groundwater; numerical modeling; design of wastewater discharge system.

CIVE 447 Water Resources Systems: Planning and Management 3(3, 0, 0)

Prerequisite: Senior Standing

A course that introduces the main concepts and principles of water resources planning and management; logical steps in engineering planning and decision making; water resources systems analysis, modeling, simulation, and optimization; economic and financial analysis; flood protection and reservoir operation; and water resources management case studies.

CIVE 448 GIS for Water Resources and Environmental Engineering 3(3, 0, 0)

Prerequisite: CIVE 250, CIVE 260

A course that introduces the concepts and principles of Geographic Information Systems (GIS) from the perspective of water resources and environmental engineering. It provides coverage of state-of- the-art GIS methods and tools, specifically targeting water resources and environmental applications including: spatial and terrain analysis, geo-statistical analysis, watershed delineation and identification of river networks, representation of groundwater and aquifer systems, time series analysis, and development of GIS integrated water and environmental models.

CIVE 462 Urban Transportation Planning I 3(3, 0, 0)

Prerequisite: CIVE 360

An introductory course on methods and models used in transportation planning with emphasis on the urban context.

CIVE 463 Traffic Engineering 3(3, 0, 0)

Prerequisite: CIVE 360

A course outlining traffic engineering studies; traffic control of signalized and unsignalized intersections; signal control hardware and maintenance; arterial performance and operations; network optimization.

CIVE 464 Transportation Systems Analysis 3(3, 0, 0)

Prerequisite: CIVE 360

A course on transportation and traffic problems in modern society. Among the topics covered are travel forecasting problems and methods; theoretical techniques for traffic flow description and management; highway, railway, and runway capacity and performance characteristics; economic considerations; cost functions.

CIVE 465 Design and Management of Transport Operations 3(3, 0, 0)

Prerequisite: CIVE 360

A course that covers the application of quantitative techniques from operations research and probabilistic analysis to transportation problems. Applications covered include: pickup and delivery systems, emergency urban services, facility location, and network problems.

CIVE 466 Transportation Economics 3(3, 0, 0)

Prerequisite: CIVE 360 and COEN 300

A course that investigates the application of economic principles to the evaluation of projects and policies in the transport sector such as transport project benefits, costs, and financing, and pricing in the transport sector.

CIVE 470 Introduction to Geographic Information Systems 3(3, 0, 0)

Prerequisite: CIVE 260

An introductory course on Geographic Information Systems (GIS) and their applications in the planning and engineering fields, alternatives in computer-based graphics, date concepts and tools, network data management and planning applications, and implementation issues.

B) Elective Courses – *Environmental*

CIVE 450 Methods of Environmental Sampling and Analysis 3(3, 0, 0)

Prerequisite: CIVE 250

A course on sampling techniques and instrumental methods in environmental sciences; determination of pollutants in water, air, and soil; analytical techniques; adaptation of procedures to specific matrices; case studies.

CIVE 451 Environmental Chemistry and Microbiology 3(3, 0, 0)

Prerequisite: CIVE 250

A course that deals with organic, inorganic, and physical chemistry; chemical equilibrium; reaction kinetics; acidity, alkalinity; composition, morphology, and classification of microorganisms; energy, metabolism, and synthesis; growth, decay, and kinetics; biological water quality indicators.

CIVE 452 Environmental Management and Decision Making 3(3, 0, 0)

Prerequisite: Senior Standing and CIVE 250

A course that deals with mathematical programming techniques, multi-objective optimization, and the generation of alternatives, as these are used in environmental systems analysis and management; as well as introducing how considerations such as economics, uncertainty, equity, and other sociopolitical parameters may influence environmental management and decision-making.

CIVE 453 Water and Sewage Works Design 3(3, 0, 0)

Prerequisites: CIVE 351

A course that examines the design of water and wastewater schemes, including design reports and a literature search on the development of conventional treatment processes.

CIVE 454 Solid Waste Management I 3(3, 0, 0)

Prerequisite: CIVE 351

A course on nature and effects of solid wastes including hazardous wastes; engineering management principles, practices, and techniques for management of solid wastes administration; solid waste generation, storage, collection and transport, processing, resource recovery, and disposal; trip to a local facility.

CIVE 455 Solid Waste Management II 3(3, 0, 0)

Prerequisite: CIVE 454

A course on the design of solid waste disposal schemes, including design reports and a literature search on the development of conventional treatment and disposal processes.

CIVE 456 Air Pollution and Control 3(3, 0, 0)

Prerequisite: CIVE 250

An introductory course on air pollutants, sources, and effects; emissions estimates, regulations, and monitoring techniques; particulate matter characterization; meteorology and atmospheric dispersion; air pollution control processes.

CIVE 457 Industrial/Hazardous Waste Management 3(3, 0, 0)

Prerequisites: CIVE 451

A course that deals with sources, quantity, and quality of industrial wastes; basic industrial waste treatment processes; major industries, types of wastes, and existing treatment practices; disposal and fate of industrial wastes.

CIVE 458 Environmental Impact Assessment 3(3, 0, 0

Prerequisite: CIVE 250

A course that outlines theories and procedures of assessing environmental impact; analysis of the impact of development on various measures of environmental quality; benefit-cost considerations in environmental impact assessment.

CIVE 459 Special Topics in Environmental Engineering 3(3, 0, 0)

Prerequisite: discretion of advisor, 80 credits

Any selected topic in the state-of-the-art in Environmental Engineering.

DEPARTMENT OF ELECTRICAL ENGINEERING

Mission

The mission of the Department of Electrical Engineering is to provide students with quality education based on a thorough foundation in Electrical Engineering, mathematics, physical sciences, and technology; to guarantee students an exposure to major research and practical design experiences in electrical engineering; to enrich the students' academic experience with global perspective and awareness of their leadership role in regional development; and to raise the students' involvement in community service programs and awareness of the community needs.

Academic Programs

Currently, the Department of Electrical Engineering offers an undergraduate program:

- Bachelor's in electrical engineering (BEE)
- Master of Science in Electrical Engineering (MSEE)

BACHELOR OF ELECTRICAL ENGINEERING (BEE) PROGRAM

The Electrical Engineering program is designed to grant students a Bachelor degree upon the successful completion of the five-year curriculum.

Program Objectives

The Department of Electrical Engineering offers an undergraduate program in Electrical Engineering that has the following main objectives:

1. Provide students with knowledge of the fundamental prerequisites in theory, design, and basic sciences for a career in electrical engineering.
2. Develop in students a range of skills based on theoretical and practical knowledge as well as specialized training in electrical engineering.
3. Develop in students a professional approach to engineering based on strong communication skills, teamwork, responsibility, and high ethics.
4. Equip students with proper tools to address open research problems in electrical engineering and to explore opportunities to apply the acquired knowledge in industrial settings.

Learning Outcomes

Students who graduate from the Department are expected to possess:

Knowledge and Understanding

1- Gain knowledge of mathematics, science, and engineering.
2- Outline engineering problems solutions based on the principles of physical sciences and mathematics.
3- Describe and categorize engineering related contemporary issues.

Skills

4- Solve engineering problems by applying principles of mathematics, science, and engineering.
5- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions.
6- Apply modern techniques and skills to produce solutions in global, economic, environmental, and societal contexts for engineering practice.
7- Acquire and apply life-long learning skills as needed, using appropriate learning strategies.
8- Communicate effectively with a range of audiences.

Values

9- Uphold ethical and professional responsibilities.
10- Function and contribute effectively in a team.

Career Opportunities

Modern Modern electrical engineering is a broad and diverse field that rivals all engineering disciplines in its impact on society. The expanding role of electrical engineering in today's society reflects the variety and scope of this exciting profession. Local as well as regional career opportunities now available for electrical engineers span communications companies; hardware companies; consulting offices; design and implementation of electronic systems; electric power industry; biomedical equipment companies; radio and television broadcasting; control and manufacturing; electrical power generation, transmission and distribution; and industrial automation companies.

The Department of Electrical Engineering is committed to provide its students with meaningful, up- to-date skills and knowledge that allow them to pursue successful engineering careers and make deep impacts in their workplace. With these objectives in mind, the Electrical Engineering program is designed around fostering contemporary best practices and skills in line with the job opportunities for electrical engineers primarily within Tabuk and the Gulf region.

Consequently, graduates of the Department of Electrical Engineering are poised to take advantage of numerous job opportunities within the Tabuk province, and in the growing Saudi and Gulf markets, several but not limited t:.

- Communication Systems Engineer (e.g. Saudi Telecom, Zain, STC …)
- Energy Systems Engineer (e.g. Saudi Electricity Company, NEOM …)
- Control Systems Engineer (e.g. SAUDI FAL, Control Systems Co. LTD. …)
- Electronic Systems Engineer (e.g. SAUDICO ELECTRONIC SYSTEMS, SES …)
- Electro-Mechanical Systems Engineer (e.g. EMS)
- Digital Design Systems Engineer (e.g. DDS)

Electrical Engineering Laboratories

In conformance with its mission and educational objectives, the department of Electrical Engineering maintain various state-of-the-art instructional and research laboratories that provide students with hands-on experience across a broad spectrum of disciplines such electronic circuit design, microprocessors and microcontrollers, electric machines, control systems, and communication systems. Such laboratories are accessible to all Electrical Engineering students, and they also help them implement their final year projects. The department's laboratories include:

1. Circuits and Electronics Laboratory: to expose students to various circuit design, measurement, and testing techniques, and explore the characteristics of electronic components and circuits.
2. Digital Systems Laboratory: to design and verify basic digital logic circuits, practice assembly programming techniques and debugging approaches, and perform peripheral interfacing of microprocessors or microcontrollers.
3. Electric Machines Laboratory: to test and verify DC and AC machines and explore their characteristics for different operation modes.
4. Control Systems Laboratory: to design, implement, and evaluate computer-aided control experiments and experience a diverse collection of systems using control principles.
5. Communication Systems Laboratory: to evaluate the performance of various analog and digital communication systems through the design and analysis of their corresponding transmission and reception blocks.
6. Computer-based Laboratories: to conduct simulation-based analysis and interpretation in various Electrical Engineering disciplines.

Curriculum and Program Structure

The curriculum of the Electrical Engineering is designed in conformance with the plan approved by the MOE. It includes courses in basic sciences and mathematics, engineering sciences, engineering design, communications skills, and humanities and social sciences. In addition, Lab hands-on experience with emphasis on design is an important element that is integrated throughout the curriculum.

The Electrical Engineering program requirements include:

- 35 credit hours of mathematics and basic sciences,
- 87 credit hours of engineering sciences and engineering design,
- 13 credit hours of social sciences and humanities,
- 15 credit hours of English language and technical writing courses, and
- 9 credit hours in Computer and Programming.

The curriculum is designed to grant students a bachelor's degree in electrical engineering (BEE) upon the successful completion of the five years program. The first year is shared with all engineering majors, which allows students to transfer from one major to another without losing any credits earned in the first year.

Final Year Project

As part of the fifth year, students are required to carry out a design project in electrical engineering and submit a technical report. The project is a substantial piece of work that will require creative activity, original thinking, and extensive teamwork to complete the usual four phases of projects: initiation, analysis, design and implementation. Approved projects account for four credit hours and extend over a full academic year. Throughout the phases of the project, students work in groups under the supervision of a faculty member. The project aims to provide students with a transitional experience from the academic world to the professional world. It is designed to serve as a platform in which teams of Electrical Engineering students engage in a meaningful design experience requiring the solution of significant and practical engineering design problems. The objectives of the final year project are:

- Allow students to demonstrate a wide range of the skills learned at the College of Engineering during their course of study by asking them to deliver a product that has passed through the design, analysis, testing and evaluation stages.
- Encourage multidisciplinary research through the integration of material learned in the program
- Allow students to develop problem solving, analysis, synthesis and evaluation skills.
- Encourage teamwork and interaction between students.
- Improve students' communication skills by asking them to produce both a professional report and a professional poster and to give an oral presentation on their work.

The project is important for a number of reasons:

- It is the largest single piece of design work that a student does during his/her BEE degree.
- It allows students to specialize in a topic that they enjoy.
- It is the work that prospective employers will most likely ask students about during interviews.
- It allows students to learn a wide range of the skills since the first year.
- Students must demonstrate these skills by delivering a product that has passed through the design, analysis, testing and evaluation stages.

Practical Training / Internship

All engineering students are required to fulfill a 1-credit hour internship period of 8 to 12 weeks. This graduation requirement entails that each senior student (one who has completed around 80% of the total credit requirement) gains practical training experience during the summer term prior to graduation, or in the graduation semester, with either a company or an academic institution while involved in a practical experience.

Degree Requirements

To graduate with a bachelor's in electrical engineering, students must satisfactorily complete 159 credit hours. The distribution of courses is as follows:

A) University requirements

Students working towards the bachelor's degree in electrical engineering must complete a total of 37 credit hours in University requirements, which are detailed as follows:

- 6 credit hours of Arabic: ARAB 101 and ARAB 201;
- 15 credit hours of English communication skills: ENGL 100, ENGL 101, ENGL 102, ENGL 203, and ENGL 206;
- 7 credit hours of social and cultural studies: SOCS 101, PHE 101, and a free elective course;
- 3 credit hours of computing for engineers: IT 100;
- 6 credit hours of mathematics: MATH 100 and STAT 100

B) College requirements

The College of Engineering requirements for the bachelor's degree in electrical engineering include 40 credit hours detailed as follows:

- 11 credit hours in sciences: PHYS 101, PHYS 102, PHYS 103L, and CHEM 101/ 101L;
- 18 credit hours in mathematics and statistics: MATH 101, MATH 102, MATH 201, MATH 202, MATH 215, and STAT 230;
- 6 credit hours in Engineering Programming: CSC 101 and ELEE 230;
- 1 credit hour in Engineering Drawings: CIVE 205;
- 3 credit hours in Engineering Economy: COEN 300;
- 1 credit hour in Engineering Ethics: COEN 401;

C) Program requirements

Electrical Engineering students must complete 82 credit hours in program requirements including the following 70 core courses:

- ELEE 210, ELEE 220, ELEE 240, ELEE 250, ELEE 250L, ELEE 290, ELEE 290L, ELEE 340, ELEE 340L, ELEE 350, ELEE 360, ELEE 371, ELEE 380, ELEE 390, ELEE 399L, ELEE 400, ELEE 440L, ELEE 451, ELEE 460L, ELEE 461, ELEE 462, ELEE 469, ELEE 470, ELEE 470L, ELEE 480L, ELEE 476, ELEE 485, ELEE 490, ELEE 498, ELEE 499, MECH 225

In addition, Electrical Engineering students must take four electives (12) credit hours from the accepted electives include:

- ELEE 403, ELEE 422, ELEE 423, ELEE 431, ELEE 442, ELEE 443, ELEE 463, ELEE 465, ELEE 468, ELEE 471, ELEE 474, ELEE 491

Study Plan (159 Credit Hours)

Year I

First Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ARAB 101	Basic Academic Arabic	3	
ENGL 100	General English	3	
IT 100	Information Technology	3	
MATH 100	Mathematics I	3	
SOCS 101	Islamic Civilization I	3	
PHYS 101	General Physics I	3	
	Total Credits	**18**	

Second Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
ARAB 201	Advanced Academic Arabic	3	ARAB 101
CIVE 205	Engineering Drawing	1	
CSC 101	Introduction to Computing for Engineers	3	IT 100
ENGL 101	Basic Academic English I	3	ENGL 100
STAT 100	Introduction to Probability and Statistics	3	MATH 100
PHYS 102	General Physics II	3	PHYS 101
PHE 101	Physical and Health Education	1	
	Total Credits	**17**	

Year II

Third Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
ELEE 210	Electric Circuits I	3	PHYS 102
ELEE 220	Logic Design	3	CSC 101
CHEM 101	General Chemistry	3	
ENGL 102	Basic Academic English II	3	ENGL 101
MATH 101	Calculus I	3	MATH 120
PHYS 103L	Physics Lab	1	(co) PHYS 102
	Total Credits	**16**	

Fourth Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
ELEE 240	Electronics	3	ELEE 210
ELEE 230	Programming for Engineers	3	CSC 101
ELEE 250	Electric Circuits II	3	ELEE 210
ENGL 203	Advanced Academic English I	3	ENGL 102
MATH 102	Calculus II	3	MATH 101
CHEM 101L	General Chemistry Lab	1	(co) CHEM 101
	Total Credits	**16**	

Year III

Fifth Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
ELEE 290	Digital Systems	3	ELEE 220, ELEE 230
MATH 201	Calculus and Analytic Geometry III	3	MATH 102
ELEE 340	Electronic Circuits	3	ELEE 240
ENGL 206	Technical Writing	3	ENGL 102
ELEE 360	Electric Machines	3	ELEE 250
ELEE 250L	Electrical Circuit Lab	1	ELEE 250
	Total Credits	**16**	

Sixth Semester (14 Credit Hours)

Course	Title	Credits	Prerequisites
MATH 202	Differential Equations	3	MATH 102
STAT 230	Probability and Statistics	3	MATH 102
ELEE 461	Fundamentals of Power Systems Analysis	3	ELEE 250
ELEE 290L	Digital Systems Lab	1	ELEE 290
ELEE 340L	Electronics Lab	1	ELEE 240
MECH 225	Engineering Mechanics	3	PHYS 101
	Total Credits	**14**	

Year IV

Seventh Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
MATH 215	Linear Algebra and Numerical Techniques	3	MATH 202
ELEE 350	Signals and Systems	3	ELEE 210, MATH 202
ELEE 371	Principles of Data Communications and Networking	3	STAT 230
COEN 300	Engineering Economy	3	(co) STAT 230
ELEE 460L	Machines Lab	1	ELEE 360
ELEE 469	Power System Protection	3	ELEE 461
	Total Credits	**16**	

Eight Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
ELEE 462	Power Electronics	3	ELEE 340
ELEE 380	Control Systems	3	ELEE 250, ELEE 350
ELEE XXX	Specialization Elective	3	
ELEE 470	Communication Systems	3	ELEE 350, STAT 230
COEN 401	Communication Skills and Ethics	1	ENGL 203
ELEE 399L	MATLAB for Engineers	1	ELEE 230
ELEE 440L	Electronic Circuits Lab	1	ELEE 340
	Total Credits	15	

Summer Semester (1 Credit Hour)

Course	Title	Credits	Prerequisites
ELEE 400	Summer Internship for Electrical Students	1	Last Summer in the proposed study sequence & ENGL 206
	Total Credits	**1**	

Year V

Ninth Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
ELEE XXX	*Specialization Elective*	3	
ELEE 390	Electromagnetic	3	ELEE 350
ELEE 451	Digital Signal Processing	3	ELEE 350
ELEE 498	Final Year Project I	1	ENGL 206, Completion of 108 credit hours
ELEE 470L	Communications Lab	1	ELEE 470
ELEE 480L	Control Lab	1	ELEE 380
ELEE 485	Instrumentation	3	ELEE 380
	Total Credits	**15**	

Tenth Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
ELEE XXX	*Specialization Elective*	3	
ELEE 499	Final Year Project II	3	ELEE 498
ELEE 476	Digital Communications	3	ELEE 470
	Free Elective	3	
ELEE 490	Electromagnetic Waves and Transmission	3	ELEE 390
	Total Credits	15	

Total Program Credits	**159**[3]	

[3] Completion of the Bachelor of Science in Electrical Engineering

Course Descriptions

ELEE 210 Electric Circuits I **3(3, 0, 0)**

Prerequisite: PHYS 102

System of units, Circuit variables (charge, current, voltage, power, energy). Circuit elements, and simple resistive circuits. Techniques of DC circuit analysis KVL, KCL, Nodal and Mesh analyses. The ideal Operational amplifier, Inductance and Capacitance. Natural and step responses of first order RL and RC circuits. Natural and step responses of RLC circuits.

ELEE 220 Logic Design **3(3, 0, 0)**

Prerequisite: CSC 101

Number systems and codes, Boolean algebra; combinational circuit design; minimization methods; sequential logic design principles; latches and flip-flops, design of sequential circuits using flip flops, counters and registers, state machines.

ELEE 230 Programming for Engineers **3(3, 0, 0)**

Prerequisite: CSC 101

This is an introductory programming course with an emphasis on problem-solving algorithmic ideas. Its topics include data types, selection, repetition, strings, functions, and pointers. Laboratory based lectures are an integral part of this course.

ELEE 240 Electronics **3(3, 0, 0)**

Pre requisite: ELEE 210

A course on semiconductors; semiconductor devices including PN junctions, diodes, Bipolar junction transistors (BJT), MOS field effect transistors (MOSFET), operational amplifiers (OP-AMPs); device characteristics; diode and transistor circuits. The course covers fundamental skills in analysis of electronic circuits: DC biasing, AC small signal analysis, and circuit simulation.

ELEE 250 Electric Circuits II **3(3, 0, 0)**

Prerequisite: ELEE 210

Sinusoidal steady state analysis. Techniques of AC circuit analysis, AC power analysis (instantaneous, average power maximum average power transfer, complex and apparent power, power factor and power factor correction). Analysis of three-phase circuits. Mutual inductance and magnetically coupled circuits. Resonance circuits. Frequency response using Bode plots.

ELEE 250L Electric Circuits Laboratory **1(0, 0, 2)**

Prerequisite: ELEE 250

Description: Measurement Device (Ammeters, Voltmeters, Oscilloscope), DC Circuit analysis (Ohm`s Law, KCL, KVL, Current division, voltage division, Series/Parallel Combinations of Resistors, Thevenin's and Norton`s Equivalent Circuits, Maximum Power Transfer), Frequency Response of RL and RC Circuits, Phase Measurements Using the Oscilloscope, Series Sinusoidal Circuits, Parallel sinusoidal Circuits, Series-Parallel Sinusoidal circuits, Series-Parallel sinusoidal Circuits, Resonant Circuits, Frequency response of filters (low-pass, high-pass, Band-pass).

ELEE 290 Digital Systems **3(3, 0, 0)**

Prerequisite: ELEE 220 and ELEE 230

Microprocessor and Microcontroller design and applications: internal architecture, programming, interfacing techniques, and performance evaluation. The course includes a design project.

ELEE 290L Digital Systems Lab **1(0, 0, 2)**

Co-requisite: ELEE 290

Logic circuit design: combinational and sequential circuits; computer organization and interfacing techniques; program-controlled and interrupt-driven I/O; memory organization; simple peripheral devices and controllers; bus interfaces; microcontroller-based designs.

ELEE 340 Electronic Circuits 3(3, 0, 0)

Prerequisite: ELEE 240

A course on BJT amplifiers; common emitter, common collector, common base; MOSFET amplifiers; common source, common gate; multistage amplifier; Darlington-pair transistor differential amplifiers; frequency response of amplifiers; practical considerations of operational amplifiers; oscillators.

ELEE 340L Electronics Lab 1(0, 0, 2)

Co-requisite: ELEE 340

A practical course on silicon and germanium diode characteristic; light emitting diode (LED); Zener diode; half wave rectifier; full wave rectifier; BJT transistor characteristics; basic op-amps amplifier like differential; summer; multiplier; division.

ELEE 350 Signals and Systems 3(3, 0, 0)

Prerequisite: ELEE 250 and MATH 202

Signals and Systems, introduces electrical engineering students to core tools in continuous-time signals and linear systems characterization and analysis, time domain analysis using convolution, frequency domain analysis using Fourier series and transform, and Laplace transform.

ELEE 360 Electric Machines 3(3, 0, 0)

Prerequisite: ELEE 250

Magnetic circuits, ideal and real transformers, equivalent circuit of a power transformer, single phase, three phase, auto transformers construction, regulation, transformer taps and Voltage Regulation, The voltage and induced torque equations in DC machines, The construction of DC machines, power flow and losses in DC machines, Motor equivalent circuit, Motor starters, Efficiency , DC generators, voltage control and regulation , construction of AC machines, principle of operation as motor and generator synchronous generators, construction, equivalent circuits, power and torque equations, parallel operation. Synchronous motors starting, equivalent circuit-synchronous condenser. Induction motors, construction, equivalent circuit, power and torque, speed control.

ELEE 371 Principles of Data Communication and Networking 3(3, 0, 0)

Prerequisite: STAT 230

Network basic concepts. Network layers: OSI model and TCP/IP protocol architecture. Physical layer protocols and digital transmission fundamentals. Data link layer. Network layer. Network topologies. Medium access control systems. Packet switching and circuit switching. Routing in packet switching. Multiplexing.

ELEE 380 Linear Control Systems 3(3, 0, 0)

Prerequisite: ELEE 250, ELEE 350

A course that covers mathematical modeling (transfer functions, block diagrams, signal flow graph) of linear continuous single input/single output dynamical systems; Open-loop and Closed-loop systems analysis; First and second order systems, Systems Stability (Routh-Hurwitz criterion); Steady-state error analysis of unity-feedback control systems; Frequency response analysis (Bode plots, Nyquist, Root-locus method); Introduction to PID controllers (performances, Ziegler-Nichols tuning method).

ELEE 390 Electromagnetic Field Theory 3(3, 0, 0)

Prerequisites: ELEE 350

This course covers the fundamentals of engineering electromagnetics. It deals with transmission line theory; the study of electrostatic fields in vacuum and dielectrics, conductors, capacitance, electrostatic potential energy; magnetostatic fields, Biot-Savart law, Ampere's law, vector magnetic potential, inductance.

ELEE 399L MATLAB for Engineers 1(0, 0, 2)

Prerequisites: ELEE 230

This course covers MATLAB fundamentals and graphics; m-files programming; Simulink; electrical engineering (e.g. control, communication and power systems) related MATLAB toolboxes. Laboratory based lectures are an integral part of this course: ELEE 230, ELEE 350.

ELEE 400 Summer Internship for ELEE Students (1 Cr)

Prerequisite: ENGL 206, Completion of 108 credit hours

This is an eight to twelve-week professional training course in electrical engineering. This course is open for students with senior standing (who have completed around 80% of the total credit requirement) to gain practical training experience during the summer prior to graduation, or during graduation semester, with either a company or an academic institution while involved in a practical experience.

ELEE 440L Electronic Circuits Lab 1(0, 0, 2)

Prerequisite: ELEE 340

PSPICE simulation of electronic circuits; linear applications of op-amp; Wein-bridge oscillator; active filters: LPF and HPF; Schmitt trigger and astable multi-vibrator; differential amplifier using BJT; CMOS inverter characteristics; TTL inverter characteristics.

ELEE 451 Digital Signal Processing 3(3, 0, 0)

Prerequisite: ELEE 350

Review of signals, systems, and transforms; design of Digital Filters: FIR and IIR; sampling and reconstruction of signals; multi-rate signal processing with applications; effects of finite word length; discrete random signals and Spectral Estimation; introduction to 2D signal and image processing.

ELEE 460L Machines Lab 1(0, 0, 2)

Prerequisites: ELEE 360

Operation of Single-Phase Transformers. Three-Phase Transformers. DC Generator, Series, Shunt, Compound Generators. DC Motors, Series, Shunt, Compound Motors. Synchronous Generator, No-load test, parallel operation. Synchronous motors, Induction motors. Single-Phase Induction motors. Plot curves of an AC machine characteristics.

ELEE 461 Fundamentals of Power Systems Analysis 3(3, 0, 0)

Prerequisite: ELEE 250

Description: Introduction to Power systems, Review of Basic Principles (active, Reactive, and compels power, power factor, power factor correction, balanced three-phase circuits and analysis Y/Δ loads, per-phase analysis). Generator Model, Transformer Model (equivalent circuits, types), Per-Unit Systems and Calculations, Transmission Line Parameters and Calculation (resistance, capacitance, inductance, corona), Line Model and Performance (modeling of short, medium, and long lines, voltage and current waves, surge impedance loading, complex power flow, power transmission capability, line compensation).

ELEE 462 Power Electronics 3(3, 0, 0)

Prerequisite: ELEE 340

Introduction Power semiconductor Devices. Signals and Integration. AC-DC Converters (Rectifiers), Un-controlled Rectifiers, controlled. Rectifiers. Single-Phase and Three-Phase converters. DC-DC converters, Step-Down and Step-up converters. Switching Mode Regulations. Applications, DC Drivers, DC power Supplies.

ELEE 470 Communication Systems 3(3, 0, 0)

Prerequisite: ELEE 350 and STAT 230

This is an introductory course that mainly introduces the basic techniques used in communication systems. It strongly depends on signal analysis; equivalent low-pass and band-pass models, Hilbert

transform, and power spectral density. This course introduces students to amplitude modulation and demodulation: large carrier and suppressed carrier, single side-band, vestigial side band, and coherent and non-coherent detection; Angle modulation and demodulation: FM and PM, wideband and narrowband FM, transmission bandwidth, generation and demodulation of FM. Noise representation and analysis: SNR analysis of AM and FM systems. Pulse modulation techniques: sampling theorem, PAM, PPM, PWM, PCM, and Delta Modulation. Introduction to digital communications.

ELEE 470L Communication Systems **1(1, 0, 0)**

Prerequisite: ELEE 470

A laboratory course with experiments covering the following topics: AM and FM modulation/demodulation, sampling and quantization, digital modulation (PSK, FSK, MSK, GMSK), digital demodulation, and inter-symbol interference.

ELEE 476 Digital Communications **3(3, 0, 0)**

Prerequisite: ELEE 470

Pulse code Modulation (PCM). Baseband transmission: Pulse shaping and line coding. Nyquist's criterion for distortion less transmission. Digital transmission techniques: Binary and Multilevel ASK, FSK and PSK. Detection principles for digital communication signals in noise. Coherent and non-coherent detection. Performance analysis of digital modulation schemes in the presence of noise. Evaluation of symbol and bit error rate. Channel coding.

ELEE 480L Control Lab **1(0, 0, 2)**

Prerequisite: ELEE 380

A laboratory course that covers analysis of linear systems; second order systems; effects of poles and zeros on the transient response; effect of gain on response and stability; compensation implementation.

ELEE 485 Instrumentation **3(3, 0, 0)**

Prerequisite: ELEE 380

This is a design course for complete instrumentation systems including measurements, sensors, data acquisition, and component integration. Application areas and course projects include industrial control, laboratory measurements, automation systems, and the like. This course is completed with a set of laboratory experiments.

ELEE 490 Electromagnetic Waves and Transmission **3(3, 0, 0)**

Prerequisite: ELEE 390

This course covers basic concepts and methods related to time-varying electromagnetic fields. It deals with impedance matching, Maxwell's equations for time varying fields, plane-wave propagation, and wave reflection and transmission.

ELEE 498 Final Year Project I **1(1, 0, 0)**

Prerequisite: ENGL 206, Completion of 108 credit hours

This course is intended to provide students with practical experience in a wide range of electrical engineering applications including electronics, power, control, computer, and communications. Students learn how to initiate a project in an engineering discipline by completing the main tasks: define the project, state the objectives, complete a literature survey, set project specifications, and select a design method.

ELEE 499 Final Year Project II **3(0, 3, 0)**

Prerequisite: ELEE 498

In this course, students work in groups to complete the project initiated in ELEE 401 under the supervision of an instructor. The course is offered either in lecture style with covered subjects including: design and implementation issues related to projects, progress evaluation, change management, and closure; or as individual groups supervised by different instructors.

Electives Courses:

ELEE 403 Special Topics in Electrical Engineering 3 (3, 0, 0)

Prerequisite: discretion of advisor

Any selected topic in the state-of-the-art in Electrical Engineering.

ELEE 422 Computer Architecture 3(3, 0, 0)

Prerequisite: ELEE 290

A course on the principles, techniques, and trade-offs used in designing modern processor architectures. Topics include: benchmarking and performance evaluation, long-latency instruction pipelining, hardware and software techniques for exploiting instruction-level parallelism (out-of-order, speculative, and predicated instruction execution; multithreading; loop unrolling, software pipelining, and trace scheduling), high performance memory systems, and multiprocessor systems and programming.

ELEE 423 Embedded Systems Design 3(3, 0, 0)

Prerequisites: ELEE 290

This is a course on embedded hardware and software design. The system design process: requirements analysis, specification, hardware/software co-design, testing; Embedded computing platforms: general- and special-purpose processors, hardware accelerators, systems-on-a-chip, intellectual property (IP) core-based design, embedded networks; Software design tools and technologies: CAD tools, compilers, and assemblers. Hardware design tools and technologies: hardware-description languages, high-level synthesis tools, ASIC and FPGA design flows; Real-time operating systems: multiple tasks and processes, context switching, task scheduling, inter-process communication mechanisms; Low-power computing: circuit, architecture, and application techniques; System reliability and fault tolerance.

ELEE 431 Computer Networks 3(3, 0, 0)

Prerequisites: ELEE 371

A course that outlines data communications; wide area networks; circuit and packet switching; routing; congestion control; local area networks; communications architecture and protocols; internetworking.

ELEE 442 Digital Integrated Circuits 3(3, 0, 0)

Prerequisite: ELEE 290 and ELEE 340

A course on digital electronic circuits; models, current equations, and parasitic of CMOS transistors for digital design; study of CMOS inverter and logic gates, including analysis, design, simulation, layout, and verification; advanced circuit styles; sequential circuits; advanced topics: semiconductor memories, power grid, clocking strategies, data-path building blocks, deep-submicron design issues, interconnect.

ELEE 443 RF and Microwave Circuits for Communications 3(3, 0, 0)

Prerequisite: ELEE 340, ELEE 390

The course focuses on the analysis and design of high-frequency electronic circuits, with emphasis on RF and Microwave circuits and components for communication systems. The course covers the basic principles of radio-frequency (RF) and microwave circuits design, as applied to the design of micro-strip and coplanar lines, impedance transformers, low-pass and band-pass filters, directional couplers, power dividers, amplifiers, mixers, and diode detectors. It provides understanding of S-parameters and signal-flow graph analysis techniques. The course enables the student to practice RF and Microwave circuit design through the use of computer-aided design tools to build, simulate and analyze the performance of high frequency circuits.

ELEE 463 Electric Drives 3(3, 0, 0)

Prerequisite: ELEE 360

Fundamental and basic principles of electric motor drive systems are studied. Selecting the proper

electric motor for different applications based on the characteristics of the electrical machine and the mechanical load are introduced. Moreover, designing a suitable power electronics converter and its associated control system (speed control, position control, and current control) for industrial drives are presented. Electric drives for dc motors, brushless dc motors, three-phase induction motors, and electronic low-power motors are thoroughly explained.

ELEE 465 Power System Planning 3(3, 1, 0)

Prerequisite: ELEE 461

Basic power system load forecast methodologies, Electric power system loads types and characteristics, Electric power system energy consumer categories, Power system generation and transmission reliability evaluation, Power system cost assessment, Electric power system load management and energy conservation strategies. Power system generation planning, Transmission system planning, and substation expansion planning.

ELEE 468 Renewable Energy Systems 3(3, 0, 0)

Prerequisite: ELEE 250

Renewable energy resources, Wind energy, types of wind turbines, solar thermal energy and solar PV, waste energy and biomass, tidal and water wave power, Hydropower plants, Micro-hydro generation technology, geothermal energy, fuel cells and hydrogen. Grid integration, recent integration requirements, micro-grid, Nano-grid, installation, large- and small scale renewables systems, role of renewable energy sources toward achieving the sustainable development goals, technical and sustainability challenges, and the future outlook for each of the renewable sources. Technical, economic, environmental, and social aspects of renewable energy. The strengths and weaknesses of different renewable energy policy options (feed-in tariffs, scheduling, energy management, quotas, etc.).

ELEE 469 Power System Protection 3(3, 0, 0)

Prerequisite: ELEE 461

It is an introductory course for the fundamentals of power System protection, that reviews the different types of faults in the power system, principles and components of power system protection, types and operating principles of protective relays, protection of transmission lines (overcurrent, distance and pilot protection), apparatus protection (Bus bar-reactor, transformer, generator, motor), power fuses, circuit breakers, overvoltage protection and mitigation techniques.

ELEE 471 Wireless Communications 3(3, 0, 0)

Prerequisite: ELEE 370

A course on wireless channel models; performance of digital modulation schemes in wireless channels; diversity techniques; channel coding and interleaving in fading channels; adaptive equalization in wireless channels; multiple access techniques; fundamentals of cellular communications; current wireless communication systems.

ELEE 474 RF and Microwave Communication Systems 3(3, 0, 0)

Prerequisites: ELEE 340 and ELEE 390

This course introduces students to system blocks, system parameters and architectures of RF and microwave systems for wireless communications. It mainly targets the physical layer of a communication system, addresses the operation of the components that reside within the RF chain, details the functional level modeling of RF systems by accounting for the gain, noise, non-linearity, sensitivity and dynamic range parameters, and overviews link budget analysis of RF radio links.

ELEE 491 Antenna Theory and Design 3(3, 0, 0)

Prerequisite: ELEE 390

This course presents the basic principles of antenna theory analysis and design for wireless communications. It covers the fundamental parameters of antennas and the analytical methods used to design linear antennas, loop antennas, antenna arrays and microstrip antennas.

DEPARTMENT OF RENEWABLE ENERGY ENGINEERING

Mission

To graduate competent renewable energy engineers who fulfill market needs and are equipped with sound knowledge and research and fundamental skills to:

- Be pioneers contributing to the comprehensive sustainable national development plans.
- Devote valuable engineering skills and knowledge toward the design, building and running of renewable energy projects.
- Support the Kingdome's efforts to introduce renewable energy as part of its energy mix, aligning with the Saudi Vision 2030.
- Work in diverse environments, Embrace lifelong learning, collaborate and lead in multidisciplinary teams.

Academic Program

Currently, the Department of Renewable Energy Engineering offers an undergraduate program:

- Bachelor in Renewable Energy Engineering (BREE)

BACHELOR OF RENEWABLE ENERGY ENGINEERING (REE) PROGRAM

The Renewable Energy Engineering program is designed to grant students a Bachelor degree upon the successful completion of the five years curriculum.

Program Objectives

The Department of Renewable Energy Engineering offers an undergraduate program in Renewable Energy Engineering that has the following main objectives:

1. Provide students with knowledge of the fundamental prerequisites in theory, design, and basic sciences for a career in renewable energy engineering.
2. Develop in students a range of skills based on theoretical and practical knowledge as well as specialized training in renewable energy engineering.
3. Develop in students a professional approach to engineering based on strong communication skills, teamwork, responsibility, and high ethics.
4. Equip students with proper tools to address open research problems in renewable energy and to explore opportunities to apply the acquired knowledge in industrial settings.

Learning Outcomes

Students who graduate from the Department of Renewable Energy Engineering are expected to possess:

Knowledge and Understanding

1- Gain knowledge of mathematics, science, and engineering.
2- Outline engineering problems solutions based on the principles of physical sciences and mathematics.
3- Describe and categorize engineering related contemporary issues.

Skills

4- Solve engineering problems by applying principles of mathematics, science, and engineering.
5- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions.
6- Apply modern techniques and skills to produce solutions in global, economic, environmental, and societal contexts for engineering practice.
7- Acquire and apply life-long learning skills as needed, using appropriate learning strategies.
8- Communicate effectively with a range of audiences.

Values

9- Uphold ethical and professional responsibilities.
10- Function and contribute effectively in a team.

Career Opportunities

Modern renewable energy engineering is a broad and diverse field that rivals all engineering disciplines in its impact on society. The expanding role of renewable energy engineering in today's society reflects the variety and scope of this exciting profession. Local as well as regional career opportunities are now available for renewable energy engineers that span solar cells industry, production of clean energy sources; such as wind and solar power plants, design and implementation of renewable energy systems, such as photovoltaic farm, wind turbine, and other renewable energy sources. In general, the graduate of this programs would maximize the energy

potential of clean energy sources including wind, solar, geothermal and hydropower.

The Department is committed to provide its students with meaningful, up- to-date skills and knowledge that allow them to pursue successful engineering careers and make deep impacts in their workplace. With these objectives in mind, the Renewable Energy Engineering program is designed around fostering contemporary best practices and skills in line with the job opportunities for renewable energy engineers primarily within Tabuk and the region.

Consequently, graduates of the Department of Renewable Energy Engineering are poised to take advantage of numerous job opportunities within the Tabuk province, especially with the growing demands of Saudi and Gulf markets for new energy sources. Several but not limited to:

I. Design engineer for solar panels or wind turbines for commercial use.

II. Research and development engineer for new technologies of renewable energy production.

III. Consulting engineer to advise clients about the design, installation, operation, and maintenance of solar power systems

IV. Planning engineer to perform plans that include alternative energy sources such as wind and solar power to reduce pollution and dependence on fossil fuels.

V. Operation and maintenance engineer for different renewable energy facilities.

Renewable Energy Engineering Laboratories

In conformance with its mission and educational objectives, the Department of Renewable Energy Engineering provides practical and advanced hands-on experience for students through state-of-the-art instructional and research laboratories including:

1. Circuits and Electronics Laboratory: to introduce students to fundamental circuit analysis and measurement instruments.
2. Renewable Energy Laboratory: to give students a basic insights on renewable energy resources such as photovoltaic, solar thermal, hydro-power, bio-fuel, bio-energy, Hydrogen and wind energy in addition to batteries storage systems.
3. Photovoltic Laboratory: to equip students with proper skills for photovoltaic parameter testing and measurement techniques to identify the behavior and efficiency of solar modules under different conditions.
4. Electric Machines Laboratory: to give students exposure to the main elements and equipment usually encountered in a power system including transformers DC machines; induction machines, single-phase induction motors; and synchronous machines.
5. Control Systems Laboratory: to offer students the experience of applying concepts and principles of linear control theory with state of the art equipment and experiments including: rotary motion control, remote sensors for Ball and Beam, magnetic levitation, coupled tanks.
6. Wind Energy laboratory: to offer students the required practical skills to analyze the performance of wind turbines in term of speed and voltage under load and no-load conditions in addition to identifying a hybrid solar-wind system operation parameters.

Curriculum and Program Structure

The curriculum of the Renewable Energy Engineering program is designed in conformance with the plan approved by the MOE. It includes courses in basic sciences and mathematics, engineering sciences, engineering design, communications skills, and humanities and social sciences. In addition, Lab hands-on experience with emphasis on design is an important element that is integrated throughout the curriculum.

The Renewable Energy Engineering program requirements include:

- 35 credit hours of mathematics and basic sciences
- 87 credit hours of engineering sciences and engineering design
- 13 credit hours of social sciences and humanities
- 15 credit hours of English language and technical writing courses
- 9 credit hours in Computer and Programming

The curriculum is designed to grant students a Bachelor degree in Renewable Energy Engineering (REE) upon the successful completion of the four-year program. The first year is shared with all engineering majors, which allows students to transfer from one major to another without losing any credits earned in the first year.

Final Year Project

As part of the fourth year, students are required to carry out a design project in renewable energy engineering and submit a technical report. The project is a substantial piece of work that will require creative activity, original thinking, and extensive teamwork to complete the usual four phases of projects: initiation, analysis, design and implementation. Approved projects account for four credit hours and extend over a full academic year. Throughout the phases of the project, students work in groups under the supervision of a faculty member. The project aims to provide students with a transitional experience from the academic world to the professional world. It is designed to serve as a platform in which teams of Renewable Energy Engineering students engage in a meaningful design experience requiring the solution of significant and practical engineering design problems. The objectives of the final year project are:

- Allow students to demonstrate a wide range of the skills learned at the College of Engineering during their course of study by asking them to deliver a product that has passed through the design, analysis, testing and evaluation stages.
- Encourage multidisciplinary research through the integration of material learned in the program
- Allow students to develop problem solving, analysis, synthesis and evaluation skills.
- Encourage teamwork and interaction between students.
- Improve students' communication skills by asking them to produce both a professional report and a professional poster and to give an oral presentation on their work.

The project is important for a number of reasons:

- It is the largest single piece of design work that a student does during his/her BEE degree.
- It allows students to specialize in a topic that they enjoy.
- It is the work that prospective employers will most likely ask students about during interviews.
- It allows students to show a wide range of the skills learned since the first year.
- Students must demonstrate these skills by delivering a product that has passed through the design, analysis, testing and evaluation stages.

Practical Training/ Internship

All engineering students are required to fulfill a 1-credit hour internship period of 8 to 12 weeks. This graduation requirement entails that each senior student (has completed around 80% of the total credit requirement) gains practical training experience during the summer term prior to graduation, or in the graduation semester, with either a company or an academic institution while involved in a practical experience.

Degree Requirements

To graduate with a Bachelor in Renewable Energy Engineering, students must satisfactorily complete 159 credit hours. The distribution of courses is as follows:

University requirements

A total of 37 credit hours of general educational requirements:

- 6 credit hours of Arabic: ARAB 101 and ARAB 201;
- 15 credit hours of English communication skills: ENGL 100, ENGL 101, ENGL 102, ENGL 203, and ENGL 206;
- 7 credit hours of social and cultural studies: SOCS 101, PHE 101, and a free elective course;
- 3 credit hours of computing for engineers: IT 100;
- 6 credit hours of mathematics: MATH 100 and STAT 100

College requirements

Students in the Renewable Energy Engineering Department are required to complete a total of 40 credit hours in college requirements distributed as follows:

- 11 credit hours in sciences: PHYS 101, PHYS 102, PHYS 103L, and CHEM 101/ 101L
- 18 credit hours in mathematics and statistics: MATH 101, MATH 102, MATH 201, MATH 202, MATH 215, and STAT 230
- 6 credit hours in Engineering Programming: CSC 101 and ELEE 230
- 1 credit hour in Engineering Drawings: CIVE 205
- 3 credit hours in Engineering Economy: COEN 300
- 1 credit hour in Engineering Ethics: COEN 401

Program requirements

Renewable Energy Engineering students must complete 82 credit hours in program requirements including the following 70 core courses:

- MECH 225, MECH 230, MECH 342, ELEE 212, ELEE 242, ELEE 350, ELEE 360, ELEE 380, ELEE 480L, ELEE 245L, REE 260, REE 310, REE 320, REE 320L, REE 340, REE 350, REE 400, REE 420, REE 460, REE 420L, REE 460L, REE 470, REE 474, REE 480, REE 487, REE 466, REE 498, REE 499,

In addition, Electrical Engineering students must take four electives (12) credit hours from the accepted electives include:

- REE 465, REE 471, REE 472, REE 475, REE 476, REE 477, REE 478, REE 479, REE 481, REE 482, REE 483, REE 485, REE 486, REE 473, REE 488.

Study Plan (159 Credit Hours)

Year I

First Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENG 100	General English	3	
IT 100	Information Technology	3	
MATH 100	Mathematics I	3	
ARAB 101	Basic Academic Arabic	3	
SOCS 101	Islamic Civilization I	3	
PHYS 101	General Physics I	3	
	Total Credits	**18**	

Second Semester (19 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 101	Basic Academic English I	3	ENG 100
STAT 100	Introduction to Probability and Statistics	3	MATH 100
CSC 101	Introduction to Computing for Engineers	3	IT 100
PHYS 102	General Physics II	3	PHYS 101
ARAB 201	Advanced Academic Arabic	3	ARAB 101
PHE 101	Physical and Health Education	1	
CHEM 101	General Chemistry I	3	
	Total Credits	**19**	

Year II

Third Semester (14 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 102	Basic Academic English II	3	ENGL 101
MATH 101	Calculus I	3	STAT 100
PHYS 103L	General Physics Lab	1	PHYS 102
CHEM 101L	General Chemistry Lab	1	CHEM 101
MECH 230	Engineering Materials	3	CHEM 101
ELEE 212	Circuits for non-Electrical Students	3	PHYS 102
	Total Credits	**14**	

Fourth Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 203	Advanced Academic English I	3	ENGL 102
MATH 102	Calculus II	3	MATH 101
ELEE 230	Programming for Engineers	3	CSC 101
ELEE 242	Electronics for non-Electrical Students	3	ELEE 212
CIVE 205	Engineering Drawing	1	CSC 101
MECH 225	Engineering Mechanics	3	PHYS 101
	Total Credits	**16**	

Year III

Fifth Semester (19 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 206	Technical Writing	3	ENGL 102
STAT 230	Probability and Statistics	3	MATH 102
MATH 201	Calculus and Analytic Geometry III	3	MATH 102
MATH 202	Differential equations	3	MATH 102
ELEE 245L	Circuits and Electronics Lab.	1	ELEE 242
REE 320	Fundamentals of Renewable Energy	3	PHYS 102
REE 260	Fluid and Thermal Sciences	3	PHYS 101, CHEM 101
	Total Credits	**19**	

Sixth Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
MATH 215	Linear algebra and Numerical Techniques	3	MATH 102
MECH 342	Heat Transfer	3	REE 260
ELEE 350	Signals and Systems	3	MATH 202, ELEE 212
ELEE 360	Electric Machines	3	ELEE 212
REE 320 L	Renewable Energy Lab	1	REE 320
COEN 300	Engineering Economy	3	STAT 230
	Total Credits	**16**	

Year IV

Seventh Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
REE 340	Fundamental of Power Systems	3	ELEE 360
REE 350	Solar Thermal Energy Design	3	REE 320, MECH 342
REE 310	Fundamentals of Power Electronics	3	ELEE 242
ELEE 380	Linear Control Systems	3	ELEE 350
REE 420	Renewable Engineering I: Applied Photovoltaic	3	REE 320, ELEE 242
	Total Credits	**15**	

Eight Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
REE 460	Renewable Engineering II: Wind Energy	3	REE 320, REE 260
REE 420L	Photovoltaic Lab.	1	REE 420
	Free Elective	3	
ELEE 480L	Control Lab	1	ELEE 380
REE 480	Power systems protection	3	REE 340
REE 470	Renewable Engineering III: other renewable Energies	3	REE 320, MECH 342
COEN 401	Engineering Ethics	1	ENGL 203
	Total Credits	**15**	

Summer Semester (1 Credit Hour)

Course	Title	Credits	Prerequisites
REE 400	Summer Internship TFor REE Students	1	Senior Standing
	Total Credits		

Year V

Ninth Semester (14 Credit Hours)

Course	Title	Credits	Prerequisites
REE 460L	Wind Energy Lab.	1	REE 460
REE 487	Hydrogen Technologies and Fuel Cells	3	REE 470
REE xxx	Specialization Elective	3	
REE xxx	Specialization Elective	3	
REE 474	Nuclear Energy	3	REE 320
REE 498	Final Year Project I	1	REE 320, 100 credits
	Total Credits	**14**	

Tenth Semester (12 Credit Hours)

Course	Title	Credits	Prerequisites
REE 466	Energy Economics and Managements	3	4th year standing
REE xxx	Specialization Elective	3	
REE xxx	Specialization Elective	3	
REE 499	Final Year Project II	3	REE 498
	Total Credits	**12**	

Total Program Credits	**159**[4]	

[4] Completion of the Bachelor of Science in Renewable Energy Engineering

Course Descriptions

Core Courses:

ELEE 212 Circuits for non-Electrical Students 3(3, 0, 0)

Prerequisite: PHYS 102

A course on fundamentals of electric circuits, basic elements and laws, Kirchhoff's current law (KCL), Kirchhoff's voltage law (KVL), techniques of circuit analysis: nodal and mesh analysis, superposition, source transformation, AC analysis, Thevenin and Norton equivalents; inductors and capacitors, A.C. Analysis, Phasor concept.

ELEE 242 Electronics for non-Electrical Students 3(3, 0, 0)

Prerequisite: ELEE 212

A course on electronics; PN junctions, diodes and its applications, Bipolar junction transistors (BJT), BJT amplifiers, Small Signal Analysis of BJT amplifier, Field Effect Transistor (FET) with applications, and operational amplifiers (OP- AMPs) with applications.

ELEE 350 Signals and Systems 3(3, 0, 0)

Prerequisite: ELEE 212, MATH 202

Signals and systems: definition, properties, and analysis; the Fourier series; the Fourier transform and its applications; the Laplace transformation and its applications; analysis and design of analog filters, MATLAB for analog signal processing.

ELEE 360 Electric Machines 3(3, 0, 0)

Prerequisite: ELEE 212

A course on three-phase circuits and power calculations; magnetic circuits; single-phase and three-phase transformers; DC and AC machines under steady-state: construction, equivalent circuit, and testing and performance characteristics.

ELEE 380 Control Systems 3(3, 0, 0)

Prerequisite: ELEE 350

A course that covers mathematical modeling (transfer functions, block diagrams, signal flow graph) of linear continuous single input/single output dynamical systems; Open-loop and Closed-loop systems analysis; First and second order systems, Systems Stability (Routh-Hurwitz criterion); Steady-state error analysis of unity-feedback control systems; Frequency response analysis (Bode plots, Nyquist, Root-locus method); Introduction to PID controllers.

ELEE 480L Control Systems Lab. 1(0, 0, 2)

Pre-requisite: ELEE 380

A laboratory course that covers analysis of linear systems; second order systems; effects of poles and zeros on the transient response; effect of gain on response and stability; compensation implementation.

MECH 225 Engineering Mechanics 3(3, 0, 0)

Prerequisite: PHYS 101

A course outlining vector mechanics of forces and moments; free-body diagrams; equilibrium of particles and rigid bodies in two and three dimensions; plane and space trusses. Kinematics of particles; Rectilinear and curvilinear motion in various coordinate systems, Kinetics of particles; Newton's second law, Central force motion. Axial loading, Material properties obtained from tensile tests, Stresses and strains due to axial loading. Thermal Stresses.

MECH 230 Engineering Materials 3(3, 0, 0)

Prerequisite: CHEM 101

The course introduces fundamental concepts in materials science as applied to engineering materials: crystalline structures; imperfections, dislocations, and strengthening, mechanisms;

diffusion; phase diagrams and transformations. Ferrous and non-ferrous metal alloys, ceramics, and polymers. Structure-property relationships. Material selection case studies.

MECH 342 Heat Transfer **3(3, 0, 0)**

Prerequisite: REE 260

A course investigating steady and transient heat conduction; extended surfaces; numerical simulations of conduction in one and two-dimensional problems; external and internal forced convection of laminar and turbulent flows; natural convection; heat exchanger principles; thermal radiation, view factors and radiation exchange between diffuse and gray surfaces as well as the use of computer packages in problem solving.

ELEE 245L Circuit and Electronics Lab **1(0, 0, 2)**

Prerequisite: ELEE 242

A laboratory course that covers the use of laboratory instruments: passive electronic components; voltage-divider circuits; sources and Thevenins's theorem; RC lead-lag networks, series resonance, and transformers, diode characteristics, diode applications; rectifier circuits; clamping and clipping; BJT characteristics; op-amp application; summer, integrator, and differentiator circuits.

REE 260 Fluid and Thermal Sciences **3(3, 0, 0)**

Prerequisite: MATH 202, PHYS 101, CHEM 101

A course on the thermodynamic state and properties of a pure substance, system and control volume concepts, work and heat, the first law of thermodynamics, energy and mass conservation, entropy, the second law of thermodynamics; applications to closed setups and flow devices; simple vapor and gas cycles applications. fluid proprieties, hydrostatics, basic control volume approach, continuity equation, Bernoulli equation, Euler's equation, energy equation momentum principle and its applications, flow through orifice, pipe, major and minor losses in pipe.

REE 310 Fundamental of Power Electronics **3(3, 0, 0)**

Prerequisite: REE 242

A course on diodes; diode circuits and rectifiers; thyristors; controlled rectifiers; power transistors; DC choppers; pulse width modulated inverters; introduction to gate and base drive circuits; switching power supplies.

REE 320 Fundamental of Renewable Energy **3(3, 0, 0)**

Prerequisite: PHYS 102

A course that covers several topics of renewable energy, energy units and energy carriers, Energy sources, renewable energy sources; wind, solar, hydro, biomass, and geothermal resources; resource assessment, electric drive options, control problems, environmental aspects of electricity generation, and stand- alone and utility applications.

REE 320L Renewable Energy Lab **1(0, 0, 2)**

Co-requisite: REE 320

Series and parallel connection of solar cells, Dependency of the power on the surface area of the solar cell and the angle of incidence of the light and its intensity, Partial shading of solar modules and dark characteristic curve for the solar cells. Absorptivity and reflectivity of different materials, focusing of light by a Fresnel lens, solar thermal collector with pump circulation and Parabolic trough collector with pump cycle. Energy balance and efficiency of a wind turbine, voltage in dependence upon the wind speed, voltage and power in dependence on the number of blades. U-I characteristic curve of the single NiMH, NiZn, LiFePo, Lead and Lithium battery modules.

REE 340 Fundamental of Power Systems **3(3, 0, 0)**

Prerequisite: ELEE 360

Basic concepts and modeling of generation, transmission, and distribution systems; load flow analysis; economic load dispatch problem; symmetrical and asymmetrical short circuit studies; simplified power system stability analysis; introduction to power system

REE 350 Solar Thermal Energy Design 3(3, 0, 0)

Prerequisite: REE 320, MECH 342

Characteristics of solar radiation and solar collectors. Collector efficiency evaluation and prediction of long term performance. System modelling, energy storage; computer simulation and modelling of performance and economic worth.

MECH 400 Summer Training Internship (1 Credit)

Prerequisite: Senior standing

This is an eight to twelve-week professional training course in renewable energy engineering.

REE 420 Renewable Engineering I: Applied Photovoltaic 3(3, 0, 0)

Prerequisite: REE 320

This course will cover main factors to the operation, design and construction of solar cells and PV system design. Solar cell loss mechanisms, design features to improve efficiency of solar cells and modules. In addition, Application and design of PV systems. Remote Area PV Power Supply systems. Grid-Connected PV systems.

REE 420L Photovoltaic Lab 1(0, 0, 2)

Prerequisite: REE 420

Demonstration of the use of solar energy for power generation. Behavior of solar module on different effects: illuminance, temperature and shading. Parameter testing of solar module: short circuit current, open circuit voltage, maximum output voltage and current. Calculating efficiency of solar module. Function of charge controller and invertor in standalone solar system. Maximum power point (MPP) tracking control. Grid feeding circuits.

REE 460 Renewable Engineering II: Wind Energy 3(3, 0, 0)

Prerequisite: REE 260, REE 320

An overview of energy sustainability and wind energy history. Wind resources characteristics. Fundamentals of physical wind, basic meteorology of wind, extraction of energy from wind. Basic introduction to wind energy and energy conversion systems. Various types of wind energy, conversation systems and aerodynamics; blade and tower structural loads, kinematics of blades and meteorology. Wind plant development, and environment and ecological impact of wind energy plants.

REE 460L Wind Energy Lab 1(0, 0, 2)

Prerequisite: REE 460

Wind turbine speed and voltage output relation. No load voltage of wind turbine. Independent wind energy AC output system. Cut-away wind power generator. Loaded output of hybrid solar module and wind turbine. Function of charge controller and inverter.

REE 466 Energy Economics and Managements 3(3, 0, 0)

Prerequisite: 4th year standing

Energy management principles; energy conversion; energy auditing; analysis; formulation of energy management options; economic evaluation, implementation & control; energy conservation techniques-conservation in energy intensive industries; steam generation, distribution systems, integrated resource planning; demand-side management; cogeneration; thermal insulation; energy storage; economic evaluation of conservation technologies; and analysis of typical applications.

REE 470 Renewable Engineering III: Other Renewable Energies 3(3, 0, 0)

Prerequisite: REE 320, MECH 342

This course will cover other kinds of renewable energy in more details including fossil fuels and nuclear energy, and then focus on alternate, renewable energy sources such as nuclear, biomass (conversions), geothermal, and hydro. Energy conservation methods.

REE 498 Final Year Project I (1 Credit)

Prerequisite: 108 credit hours, REE 320

A supervised project in groups of normally three students aimed at providing practical experience in some design aspects of renewable energy engineering. Students are expected to complete a literature survey, to critically analyze, and to acquire the necessary material needed for their intended end product.

REE 499 Final Year Project II (3 Credits)

Prerequisite: REE 498

A course in which the student integrates his/her acquired knowledge to deliver the product researched and planned in REE 498.

COEN 300 Engineering Economy 3(3, 0, 0)

Prerequisite: STAT 230

A course that covers principles, basic concepts and methodology for making rational decisions in the design and implementation of real engineering projects; time value of money, depreciation, comparing alternatives, effect of taxes, inflation, capital financing and allocation, and decision under uncertainty.

COEN 401 Communication Skills and Ethics 1(1, 0, 0)

Prerequisite: ENGL 203

A course on engineering ethics covering responsibility in engineering; framing the moral problem; organizing principles of ethical theories; computers, individual morality, and social policy; honesty, integrity, and reliability; safety, risk, and liability in engineering; engineers as employees; engineers and the environment; international engineering professionalism; and future challenges.

REE 474 Nuclear Energy 3(3, 0, 0)

Prerequisite: REE 320

Introduction to nuclear energy. Atomic and nuclear physics, the interaction of radiation and matter. Nuclear reactor operation, reactor components, nuclear cycles, neutron diffusion and moderation. Reactor shielding. Fuel reprocessing and waste disposal. Reactor licensing and safety. Economics and environmental concerns.

REE 487 Hydrogen Technologies and Fuel Cells 3(3, 0, 0)

Prerequisite: REE 470

This course will cover hydrogen production, storage, distribution, and use. Specific energy scenarios such as renewable hydrogen cycles will be explored focusing on transportation applications. Introduction to fuel cell technologies; Fuel cell components and systems; field flow plates, electrolytes, electrode materials, electrode catalysts, on-board reformers. Portable devices, utility-scale power production, transportation systems. The concept of hydrogen economy will be discussed in the context of global energy crisis.

REE 473 Life Cycle Assessment 3(3, 0, 0)

Prerequisite: REE 320

This course will deal with life cycle analysis and its use for life cycle assessment of energy systems. Methodologies, boundary issues, data bases and applications will be studied. The uses of LCA will be illustrated with industrial case studies and with studies aimed at quantifying externalities associated with different electricity generation technologies.

REE 475 Energy Economics and Managements 3(3, 0, 0)

Prerequisite: REE 310

Energy management principles; energy conversion; energy auditing; analysis; formulation of energy management options; economic evaluation, implementation & control; energy conservation techniques-conservation in energy intensive industries; steam generation, distribution systems, integrated resource planning; demand-side management; cogeneration; thermal insulation; energy storage; economic evaluation of conservation technologies; and analysis of typical applications

Elective Courses:

REE 465 Smart City Applications 3(3, 0, 0)

Prerequisite: REE 320, REE 340

This course will cover the main definitions, needs, challenges and disciplines in smart and sustainable cities. Introducing the historical development, present and future sustainability deficits of metropolitan areas. The course introduce criteria to measure sustainability, and political guiding principles and action plans formulated in order to achieve smart sustainable cities.

REE 471 Renewable Energy Policy and International Programs 3(3, 0, 0)

Prerequisite: REE 320

This course will review objectives and strategies of renewable energy policy, focusing on sustainable energy transitions, and the integration of renewable energy into electricity markets. Policy drivers, policy processes and relevant aspects of energy market structure and regulation. Selection and design of policy instruments, including regulation, taxation, tariffs, targets, incentives and market-based schemes will be explored. Specific policy and regulatory approaches, the views of different stakeholders and interaction with the broader policy regulatory environment will be examined for specific policy case studies.

REE 472 Energy and Environment 3(3, 0, 0)

Prerequisite: REE 320

Energy System and Environment; conventional and renewable energy sources. The Impact of RE in reducing CO2 emissions. Pollution growth and its sequences; Air, Water, soil, thermal, noise pollution – cause and effect; Causes of climate change in the global, the regional and the local regions.

REE 473 Life Cycle Assessment 3(3, 0, 0)

Prerequisite: REE 320

This course will deal with life cycle analysis and its use for life cycle assessment of energy systems. Methodologies, boundary issues, data bases and applications will be studied. The uses of LCA will be illustrated with industrial case studies and with studies aimed at quantifying externalities associated with different electricity generation technologies.

REE 475 Nuclear Reaction 3(3, 0, 0)

Prerequisite: REE 320

Energetic and kinetics of nuclear reactions and radioactive decay, fission, fusion, and reactions of low-energy neutrons; properties of the fission products and the actinides; nuclear models and transition probabilities; interaction of radiation with matters

REE 476 Principles of Green Building Design 3(3, 0, 0)

Prerequisite: REE 320

This course will cover the principles of green building design and construction, including incorporating green principles in renovating and remodeling, and preservation of historic structures as well as new buildings. Energy efficiency, indoor environmental quality, and sustainable building materials.

REE 477 Photovoltaic Energy System Design 3(3, 0, 0)

Prerequisite: REE 420

This course will cover the basic principles of the planning, design, installation, and operation of photovoltaic (PV) systems. Examination of PV system components, planning and design of grid-connected and stand-alone PV systems, analysis of PV systems at the residential scale through utility scale, including engineering, economic, and policy considerations.

REE 478 Biomass 3(3, 0, 0)

Prerequisite: REE 320

This course will introduce a range of biomass energy sources, including forestry, wastes and crops, as well as various technologies for capturing the stored chemical energy in biomass: direct combustion, pyrolysis, anaerobic digestion, gasification, fermentation, landfill gas and cogeneration.

REE 479 Wind Energy Converters 3(3, 0, 0)

Prerequisite: REE 420

This course will cover the principles of wind energy, design and operation of different types of wind energy converters. Water pumping machines, remote power supply and grid electricity generation. Wind energy site selection, monitoring and analyzing data, estimating output from wind generators, integrating wind generators into hybrid power systems or the grid, economics, standards and environmental impacts.

REE 481 Sustainable Energy Developing Countries 1(0, 0, 2)

Prerequisite: REE 320

This course covers many of the technical and non-technical issues relating to introducing photovoltaics and renewable energy systems and technology in developing countries. The course will cover various Recommended Practice Guides developed by industry expert groups in the areas of financing and investment mechanisms, capacity building, implementation models and quality assurance. Considering practical components related to design, implementation and maintenance of photovoltaic and renewable energy systems in developing countries and case studies will be also considered herein.

REE 482 Energy Efficiency 3(3, 0, 0)

Prerequisite: REE 320, MECH 342

This course will cover current and predicted energy use and associated GHG emissions; residential and commercial passive solar design; energy management programs; building management systems; heating, ventilation and air conditioning; and consumer products and office equipment. Impacts of transport, Opportunities to reduce transport energy with efficient engines, public transport, and urban design. Industrial systems examined include heat recovery; cogeneration; compressed air and steam distribution; and motor systems, pumps and fans. Barriers to improved energy efficiency such as up-front cost, lack of information are also covered.

REE 483 Advanced Photovoltaic Manufacturing 3(3, 0, 0)

Prerequisite: REE 420

Solar cells operating. Manufacturing of silicon solar cells. Trends in commercial, manufacturing process of environmental aspects of cell technology. Tools/methods used to improve solar cell performance and reduce solar cell cost in manufacturing, namely statistical decision making, cost modelling and regression modelling. Production processes for both screen-printed solar cells and buried contact solar cells. Quality control techniques used for PV manufacturing

REE 485 Operational Research 3(3, 0, 0)

This course will cover the topics of linear programming, Graphical and Algebraic solutions, Simplex Method. Duality and Sensitivity analysis. Transportation and assignment problems. Network analysis. Queueing theory.

Prerequisite: REE 260

REE 486 Low Energy Buildings and PV 3(3, 0, 0)

Greenhouse gas production, climate-appropriate building design, implementing energy efficiency measures. Prediction of building thermal, lighting, and solar access. PV modules in greenhouse building envelope. Technical aspect of the use of PV in buildings and the urban environment, such as heat transfer processes, partial shading, and mismatch and system siting, sizing and configuration will be investigated. System performance assessment and prediction.

Prerequisite: REE 320

REE 488 Special Topics in Renewable Energy 3(3, 0, 0)

Special renewable Energy engineering issues that are not covered in the current curriculum, problems related to recent developments and practice. There are many topics including but not limited to modelling and simulation of renewable energy systems.

Prerequisite: Advisor discretion

DEPARTMENT OF MECHANICAL ENGINEERING

Mission

The mission of the Department of Mechanical Engineering at FBSU is to:

- Offer quality engineering education and impart essential skills to prepare its graduates to meet current and future needs of the industry and other private and public institutions aligning with the Saudi Vision 2030 and NEOM needs and requirements.
- Conducting research in selected areas of general mechanical and mechatronics and Robotics engineering.
- Providing professional services such as training and consultation to the public and private sectors in the region.
- Become productive professionals and leaders by reaching out to the community and the profession through innovative services and solutions.

Academic Programs

Currently, the Department of Mechanical Engineering offers an undergraduate program:

- Bachelor in Mechanical Engineering (BME) (Two Tracks)
  - General Mechanical Engineering track
  - Mechatronics and Robotics Engineering track

BACHELOR IN MECHANICAL ENGINEERING (BME) PROGRAM

Program Objectives

The objectives of the Bachelor of Mechanical Engineering (BME) program include producing graduates who:

- Be equipped with a broad educational background in Mechanical Engineering needed to become leaders in industry and the public sector;
- Correctly apply gained knowledge, work well with other people, effectively communicate technical information and ideas with the public, their peers, customers, and employers;
- Understand the need for life-long learning, the importance and professional involvement, are aware of cultural, societal, and professional issues;
- Successfully pursue advanced the program has relevance to the mission of the college of engineering and the FBSU as it aims at graduating mechanical engineers with high quality education capable of working in industry, research and academia and are able to serve their society and country.

Learning Outcomes

Each student receiving a Bachelor degree from the ME Department will be expected to demonstrate:

Knowledge and Understanding

1- Gain knowledge of mathematics, science, and engineering.
2- Outline engineering problems solutions based on the principles of physical sciences and mathematics.
3- Describe and categorize engineering related contemporary issues.

Skills

4- Solve engineering problems by applying principles of mathematics, science, and engineering.
5- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions.
6- Apply modern techniques and skills to produce solutions in global, economic, environmental, and societal contexts for engineering practice.
7- Acquire and apply life-long learning skills as needed, using appropriate learning strategies.
8- Communicate effectively with a range of audiences.

Values

9- Uphold ethical and professional responsibilities.
10- Function and contribute effectively in a team.

Career Opportunities

The Department of Mechanical Engineering is committed to providing its students with meaningful, up-to-date skills and knowledge that will allow them to pursue successful engineering careers and make deep impacts both within the Tabuk region and across the Gulf at large. With these objectives in mind, the ME program is designed around fostering contemporary best practices and skills in line with the job opportunities for mechanical engineers within Tabuk and the Gulf.

Mechanical systems are part of our everyday life, whether it is the car we drive, the plane we fly,

the lift we use, or the products we handle. The fields that are part of mechanical engineering are numerous and cover a very large spectrum. This means that the mechanical engineering student has a challenging program to cover, but it also means that the opportunities offered to mechanical engineers are as wide and diverse.

Mechanical engineers work in a variety of areas including research and development, design, operations, maintenance, quality assurance, bioengineering, transportation (especially automotive and aerospace), energy, heating, ventilating, refrigeration and air conditioning, environmental and life-support systems, chemical, food production, materials processing, automated manufacturing and construction, heavy and precision machinery, robotics, and mechatronics. A wide spectrum of career opportunities is open to them. Because of the very broad nature of their discipline, mechanical engineers are usually in high demand. Beyond working for private enterprise, some graduates may work in government and non- government organizations, others may choose to pursue graduate studies or start their own business.

The breadth of the mechanical engineering discipline allows graduates a variety of career options. Mechanical engineers play a central role in the following industries:

- NEOM City is a futuristic city that the Saudi Arabian government plans to build in Tabuk region. The $500 billion city will include a range of smart technologies and will serve as a "living laboratory and hub for innovation," according to its planners. It will also be exclusively powered by renewable energy. The city could use a mix of solar thermal, photovoltaic, wind, and battery energy storage and all of these sources should be bundled together with artificial intelligence (AI) technology. "Synergies will be the key as there will be no competition between the different renewable energy technologies.
- The Conventional Energy Conversion Industry: mechanical applications include steam-turbine and gas-turbine power plants. These plants consist mainly of mechanical components such as turbines, pumps, condensers, boilers, furnaces, fans, piping, cooling towers, etc. The kingdom has some of the largest gas turbine plants in the world employing the latest technologies in such industry.
- The Oil and Gas Industry: mechanical applications include equipment needed to drill wells, produce oil and gas from these wells as well as collecting, storing, transporting and processing these products.
- The Desalination Industry: conversion of saline water (from sea or underground wells) to potable water involves mainly mechanical processes and equipment similar to power plants. The kingdom has the biggest desalination plants in the world.
- The Environmental Control Industry: mechanical applications include heating, ventilating, air-conditioning, refrigeration, chillers, compressors, valves, heat exchangers, controls. Because of its very hot summers, this is one of the biggest industries in the Kingdom.
- The Pipeline Industry: pipelines are used for transporting water, oil and gas. Designing the piping network, pumping stations, compressor stations, metering and controls is mainly mechanical.
- Manufacturing: mechanical applications include machining, machine tools, prototyping, fabrication, etc.
- Automation: mechanical applications include robots, data and image acquisition, recognition, and control.
- The Automotive Industry: mechanical applications include design and production of car chassis, engine, transmission and their subsystems such as control and sensors.

- The Aerospace Industry: mechanical applications include design and production of airplanes fuselages, wings, engines, control systems.
- The Biotechnology Field: mechanical applications include design and manufacture of implants, prosthetic devices, and fluidic systems for pharmaceutical industries.
- The Computer and Electronics Industry: mechanical applications include design and manufacture of disk drives, printers, cooling systems, machine tools for producing semiconductor chips.

Curriculum and Program Structure

The curriculum is designed in conformance with the plan approved by the MOE. It includes courses in basic sciences and mathematics, engineering sciences, engineering design, communications skills, and humanities and social sciences. Lab hands-on experience and emphasis on design are important elements that are integrated throughout the curriculum.

The requirements of the BME include:

- 35 credit hours of mathematics and basic sciences,
- 86 credit hours of engineering sciences and engineering design,
- 13 credit hours of social sciences and humanities,
- 15 credit hours of English language and technical writing courses, and
- 9 credit hours in Computer and Programming.

The curriculum is designed to allow students to receive the Bachelor of Engineering degree upon the successful completion of the five years program. The first year is common with other engineering majors and it allows students to switch between the engineering majors at the start of the second year of their study.

Final Year Project

As part of their fourth year, students are required to carry out a project and submit a technical report. This project is a substantial piece of work that will require creative activity and original thinking. Students in groups, normally three per group, are supervised while working on a project accounting for four credit hours, extending over a full academic year. The project aims to provide students with a transitional experience from the academic world to the professional world. It is designed to serve as a platform in which ME students in teams engage in a meaningful design experience requiring the solution of engineering design projects.

The objectives of the final year project are:

- To allow students to demonstrate a wide range of the skills learned at the College of Engineering during their course of study by asking them to deliver a product that has passed through the design, analysis, testing and evaluation stages.
- To encourage multidisciplinary research through the integration of material learned in a number of courses.
- To allow students to develop problem solving, analysis, synthesis and evaluation skills.
- To encourage teamwork.
- To improve students' communication skills by asking them to produce both a professional report and a professional poster and to give an oral presentation on their work.

The project is important for a number of reasons:

- It is the largest single piece of design work that a student does during his/her BE degree program.
- It allows students to specialize in a topic that they enjoy.
- It is the work that prospective employers will most likely ask students about during an interview.
- It allows students to show a wide range of the skills learned since the first year.

Students must demonstrate these skills by delivering a product that has passed through the design, analysis, manufacturing, testing and evaluation stages.

Practical Training / Summer Internship

All engineering students are required to fulfill a 1-credit hour internship period of 8 to 12 weeks. This graduation requirement entails that each senior student (one who has completed around 80% of the total credit requirement) gains practical training experience during the summer term prior to graduation, or in the graduation semester, with either a company or an academic institution while involved in a practical experience.

Degree Requirements

To graduate with a BME, a student must satisfactorily complete 158 credit hours. The distribution of courses is as follows:

University Requirements

Students working towards the bachelor's degree in Mechanical engineering must complete a total of 37 credit hours in University requirements, which are detailed as follows:

- 6 credit hours of Arabic: ARAB 101 and ARAB 201;
- 15 credit hours of English communication skills: ENGL 100, ENGL 101, ENGL 102, ENGL 203, and ENGL 206;
- 7 credit hours of social and cultural studies: SOCS 101, PHE 101, and a free elective course;
- 3 credit hours of computing for engineers: IT 100;
- 6 credit hours of mathematics: MATH 100 and STAT 100

College Requirements

The College of Engineering requirements for the bachelor's degree in mechanical engineering include 40 credit hours detailed as follows:

- 11 credit hours in sciences: PHYS 101, PHYS 102, PHYS 103L, and CHEM 101/ 101L;
- 18 credit hours in mathematics and statistics: MATH 101, MATH 102, MATH 201, MATH 202, MATH 215, and STAT 230;
- 6 credit hours in Engineering Programming: CSC 101 and ELEE 230;
- 1 credit hour in Engineering Drawings: CIVE 205;
- 3 credit hours in Engineering Economy: COEN 300;
- 1 credit hour in Engineering Ethics: COEN 401;

Program Requirements

The program requirements for the BME degree in ME granted when students complete 81 credit hours in program requirements including the following 69 core courses:

CIVE 210, MECH 201, MECH 210, MECH 220, MECH 231, MECH 232, MECH 233, MECH 308, MECH 310, MECH 320, MECH 330, MECH 341, MECH 342, MECH 343, MECH 344, MECH 352, MECH 353, MECH 355, MECH 360, MECH 361L, MECH 370, MECH 400, MECH 434, MECH 437, MECH 442, MECH 443, MECH 490, MECH 491, MECH 498, MECH 499

In addition, Mechanical Engineering students must take Four electives (12) credit hours from the selected Mechanical Engineering track (General Mechanical Engineering track and Mechatronics and Robotics engineering track), The accepted electives include:

- General Mechanical Engineering track:

  MECH 430, MECH 431, MECH 432, MECH 444, MECH 446, MECH 447, MECH 448, MECH 449, MECH 451, MECH 452, MECH 453, MECH 460, MECH 470, MECH 496

- Mechatronics and Robotics engineering track:

  MECH 420, MECH 430, MECH 432, MECH 433, MECH 440, MECH 460, MECH 470, MECH 481, MECH 485, MECH 492

Study Plan (158 Credit Hours)

Year I

First Semester (18 Credit Hours)

Course	Title	Credits	Prerequisites
ENG 100	General English	3	
IT 100	Information Technology	3	
MATH 110	Mathematics I	3	
ARAB 101	Basic Academic Arabic	3	
SOCS 101	Islamic Civilization I	3	
PHYS 101	General Physics I	3	
	Total Credits	**18**	

Second Semester (17 Credit Hours)

Course	Title	Credits	Prerequisites
ENGL 101	Basic Academic English II	3	ENGL 200
MATH 120	Mathematics II	3	MATH 110
CSC 101	Introduction to Computing for Engineers	3	
CHEM 101	General Chemistry I	3	
ARAB 201	Advanced Academic Arabic	3	ARAB 101
CHEM 101L	General Chemistry Lab	1	CHEM 101
	Total Credits	**17**	

Year II

Third Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
PHYS 102	General Physics II	3	PHYS 101
CIVE 205	Engineering Drawing	1	CSC 101
ENG 102	Basic Academic English II	3	ENG 101
MATH 101	Calculus I	3	MATH 120
MECH 210	Thermodynamics I	3	PHYS 101, CHEM 101
MECH 232	Engineering Materials	2	CHEM 101
	Total Credits	**15**	

Fourth Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
CIVE 210	Statics	3	MATH 102
ENGL 203	Advanced Academic I	3	ENGL 102
MATH 102	Calculus II	3	MATH 101
PHY 103L	Physics Lab.	1	PHY 102
MECH 310	Thermodynamics II	3	MECH 210
ELEE 230	Programming for Engineers	3	CSC 101
	Total Credits	**16**	

Year III

Fifth Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
MATH 201	Calculus and Analy. Geometry III	3	MATH 102
MECH 220	Dynamics	3	CIVE 210
MECH 231	Strength Of Materials	3	CIVE 210
MECH 308	Electric Circuits and Machines	3	PHY 102
ENGL 206	Technical Writing	3	ENGL 102
MECH 201	Mechanical Engineering Graphics	1	CIVE 205
	Total Credits	**16**	

Sixth Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
MECH 320	Kinematics of Mechanical Systems,	3	MECH 220
MATH 202	Differential Equations	3	MATH 102
MECH 341	Fluid Mechanics	3	MECH 220
MECH 344	Fluid Mechanics Lab	1	MECH 220
MECH 360	Manufacturing Processes I	3	MECH 230, MECH 231
MATH 215	Linear Algebra and Num. Tech.	3	MATH 202
	Total Credits	**16**	

Year IV

Seventh Semester (15 Credit Hours)

Course	Title	Credits	Prerequisites
MECH 330	Mechanical Design	3	MECH 200, MECH 231
MECH 342	Heat Transfer	3	MATH 202, MECH 210
COEN 401	Engineering Ethics	1	ENGL 203
MECH 343	Heat Transfer Lab	1	MATH 202, MECH 210
MECH 352	Instrumentation and Measurements	2	PHY 102
MECH 353	Instrumentation and Measurements Lab	1	PHY 102
MECH 233	Materials Lab	1	MECH 230,
MECH 371	Pneumatic and Hydraulic Systems	3	MECH 341, MECH 352
	Total Credits	**15**	

Eight Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
STAT 230	Probability and Statistics	3	MATH 102
MECH 442	Thermal Desalination Systems	3	MECH 341, MECH 342
MECH 443	Energy Conversion	3	MECH 342
MECH 434	Mechanical Vibrations	3	MECH 220, MATH202
	University free elective	3	
MECH 361L	Manufacturing Processes I Lab	1	MECH 230, MECH 231
	Total Credits	**16**	

Summer Semester (1 Credit Hour)

Course	Title	Credits	Prerequisites
MECH 400	Summer Internship for Mechanical Eng Students	1	ENGL 206, Senior standing
	Total Credits	**1**	

Year V

Seventh Semester (16 Credit Hours)

Course	Title	Credits	Prerequisites
MECH 437	Turbo Machinery	2	MECH 210, MECH 341
MECH 355	Introduction to Mechatronics and Robotics	3	MECH 308
MECH 490	Control Systems	3	MECH 220, MECH 309, MECH 352
MECH 491	Control Systems Lab	1	Co- MECH 490
MECH xxx	Program Elective Course	3	
MECH xxx	Program Elective Course	3	
MECH 498	FYP I	1	
	Total Credits	**16**	

Eight Semester (12 Credit Hours)

Course	Title	Credits	Prerequisites
COEN 300	Engineering Economy	3	STAT 230
MECH xxx	Program Elective Course	3	
MECH xxx	Program Elective Course	3	
MECH 499	FYP II	3	
	Total Credits	**12**	

Total Program Credits	**158**[5]	

[5] Completion of the Bachelor of Science in Mechanical Engineering

Course Descriptions

Required Courses:

MECH 201 Mechanical Engineering Graphics 2(1, 0, 2)

Prerequisite: CIVE 205

Principles and techniques of 3D surface and solid modeling; Feature-based and constraint-based modeling systems; Data transfer between systems; Relationship of geometric modeling to manufacturing; Analysis and rapid prototyping; Development of 2D drawing from the solid model database: Design annotation including mechanical fastener specification, geometric Dimensioning and tolerance.

MECH 210 Thermodynamics I 3(3, 0, 0)

Prerequisite: PHYS 101, CHEM 101

Thermodynamic concepts and definitions, states, properties, systems, control volume; processes, cycles, and units; pure substances, equation of states, table of properties; work and heat; the first law, internal energy and enthalpy; conservation of mass; SSSF and USUF processes; the second law, heat engines and refrigerators, reversible processes, Carnot cycle; entropy, Clausius inequality, principle of the increase of entropy, Efficiencies.

MECH 220 Dynamics 3(3, 1, 0)

Prerequisites: MATH 201 and CIVE 210

Kinematics of particles; Rectilinear and curvilinear motion in various coordinate systems. Kinetics of particles; Newton's second law, Central force motion, Work-energy equation, Principle of impulse and momentum, Impact, Conservation of energy and momentum, Application to a system of particles. Kinematics of rigid bodies; Relative velocity and acceleration, Instantaneous center, Analysis in terms of a parameter. Plane kinetics of rigid bodies with application of Newton's second law, Energy and impulse-momentum.

MECH 225 Engineering Mechanics (3, 0, 0)

Prerequisites: PHYS 101

A course outlining vector mechanics of forces and moments; free-body diagrams; equilibrium of particles and rigid bodies in two and three dimensions; plane and space trusses. Kinematics of particles; Rectilinear and curvilinear motion in various coordinate systems, Kinetics of particles; Newton's second law, Central force motion. Axial loading, Material properties obtained from tensile tests, Stresses and strains due to axial loading. Thermal Stresses.

MECH 231 Strength of Materials 3(3, 0, 0)

Prerequisite: CIVE 210

Axial loading, Material properties obtained from tensile tests, Stresses and strains due to axial loading, Thermal Stresses, Elementary theory of torsion, Solid and hollow shafts, Thin-walled tubes, Rectangular cross-section, Stresses in beams due to bending, shear and combined forces. Composite beams, Analysis of plane stress, Mohr's Circle, Combined stresses, Thin-walled pressure vessels, Deflection of beams, Buckling of columns.

MECH 232 Engineering Materials 3(3, 0, 0)

Prerequisite: CHEM 101

Atomic structure and bonding. Crystalline structure. Imperfections in solids (defects in crystals). Diffusion. Mechanical properties of metals. Classification of materials (properties and applications). Failure; Phase diagram and alloy systems. The iron phase diagram. Phase transformations. Ferrous and non- ferrous metal alloys, ceramics, and polymers. Structure-property relationships. Material selection case studies. Material selection case studies.

MECH 233 Engineering Materials Lab **1(0, 0, 2)**

Prerequisite: MECH 232

A laboratory course consisting of standard metallurgical and mechanical characterization tests on metals. Stress-strain plots, derived properties, fracture toughness, crystallography, hardness, and other properties. Ceramic flexure testing: Weibull plots. Polymers: stress-strain plots and derived properties, impact properties, creep, and relaxation.

MECH 308 Electrical Circuits and Machines **3(3, 0, 0)**

Prerequisite: PHYS 102

Introduction for DC circuit analysis, series and parallel, Ohm's law, KVL, KCL , Superposition theory and maximum power transfer , Introduction to analysis of AC circuit, Phasor analysis for single-phase , KVL and KCL in AC circuits, Analysis of three phase AC circuits, Transformers (construction, operation of single-phase transformers, equivalent circuit, voltage regulation and efficiency, auto-transformer, three-phase transformers), AC machinery fundamentals, three-phase induction machines (construction, operation, equivalent circuit, performance, calculations, starting of induction motors, speed control).

MECH 310 Thermodynamics II **3(3, 0, 0)**

Prerequisite: MECH 210

A course investigating the availability and work potential of systems; irreversibility; second law efficiency; availability; gas mixtures, air-conditioning; chemical reactions; high speed flow, nozzles and diffusers, environmental, economic, and social implications.

MECH 320 Kinematics of Mechanical Systems **3(3, 0, 0)**

Prerequisite: MECH 220

Mechanisms and applications, mobility and linkages. Cams, gears and gear trains. Velocity and acceleration analysis in mechanisms. Inertia forces. Principles of balance in rotating & reciprocating masses.

MECH 330 Mechanical Design **3(3, 0, 0)**

Prerequisites: MECH 230 and MECH 231

Meaning and phases of design, considerations of design, stress analysis, deflection analysis, static strength and theories of failure, fatigue strength. Design of fasteners and connections; riveted joints, bolts and screws, force-deflection diagrams of bolted connections. Welded joints. Mechanical springs, helical, leaf, torsional spring Shafts.

MECH 341 Fluid Mechanics **3(3, 0, 0)**

Prerequisite: MATH 220

Basic and definitions, units, fluid proprieties, hydrostatics, basic control volume approach, continuity equation, Bernoulli equation, Euler's equation, energy equation, momentum principle and its applications, flow through orifice, pipe, major and minor losses in pipe.

MECH 342 Heat Transfer **1(1, 0, 0)**

Prerequisite: MATH 202, MECH 310

Introduction to modes of heat transfer, one dimensional conduction; steady state and transient analysis, introduction to convection, forced and free convection analysis, internal and external flow, heat exchangers, introduction to thermal radiation heat transfer.

MECH 343 Heat Transfer Lab **1(0, 0, 2)**

Prerequisite: MECH 342

Pressure Measurements: Manometers, Flow visualization: streak-lines and streamlines, Measurement of velocity distribution using Pitot-static tube. Jet impact on a flat plate- linear momentum. Volume flow measurements: orifice, nozzle and venture, Reynolds Experiment: Laminar and Turbulent flows. Losses in Pipes. Pumps.

MECH 344 Fluid Mechanics Lab **1(0, 0, 2)**

Co-requisite: MECH 341

This course introduces general concepts of measurement systems; classification of sensors and sensor types; interfacing concepts; data acquisition, manipulation, transmission, and recording; introduction to LabVIEW; applications; team project on design, and implementation of a measuring device.

MECH 352 Instrumentation and Measurements **2(2, 0, 0)**

Prerequisite: MECH 308

This course introduces general concepts of measurement systems; classification of sensors and sensor types; interfacing concepts; data acquisition, manipulation, transmission, and recording; introduction to LabVIEW; applications; team project on design, and implementation of a measuring device.

MECH 353 Instrumentation and Measurements Lab **1(0, 0, 2)**

Co-requisite: MECH 352

Temperature Measurement and Calibration of Thermocouple, Pressure Measurement Calibration, Deflection Sensor, Force Sensor, Torque Sensor, Response of First Order Measuring System, Flow Sensor, Calibration of a Velocity Sensor Measurement of sound.

M ECH 355 Introduction to Mechatronics and Robotics **3(2, 0, 2)**

Prerequisite: MECH 308, MECH 352

This course will introduce you to Mechatronics and robotics as a multidisciplinary engineering discipline that includes electronics, electrical, mechanical, computer systems engineering, together with information technology. Theory lectures will introduce the core components of mechatronic and robotics systems: electrical and electronic components and circuits, sensors and actuators. In laboratory work, you will work on putting theory into practice in the context of a challenging project that is at the core of a national design and build competition. This course significantly develops the generic skills of teamwork, planning, leadership, and communication. Conventional lectures will be given on the theoretical aspects of these graduate capabilities. You will then apply these skills in the completion of specific learning activities such as design project, report, testing and prototyping. The dry run testing of the prototype Mechatronics and robotics mechanisms will provide an opportunity for you to receive feedback.

MECH 360 Manufacturing Processes I **3(3, 0, 0)**

Prerequisite: MECH 231, MECH 232

A course on material removal processes, processes both traditional and non-traditional. Assembly processes such as welding, brazing, soldering, and fastening are also covered with an emphasis on process capabilities and limitations, relative cost, and guidelines for process selection. This course examines the behavior of materials under processing conditions and design for manufacturing guidelines, and involves hands-on exercises in a machine shop environment.

MECH 361L Manufacturing Processes Laboratory **1(0, 0, 2)**

Co-requisite: MECH 360

An introduction to the use and operation of selected industrial machinery, various machining operations, selected welding processes and precision measuring instruments. Laboratory projects will emphasize safety and apply selected manufacturing processes, various inspection processes, fixturing and engineering materials.

MECH 370 Pneumatic and hydraulic Systems **3(3, 0, 0)**

Prerequisite: MECH 341, MECH 452

Pneumatic and Hydraulic Basics, positive displacements pumps, control valves, solenoid valves, accumulator and filters, Actuators, hydraulic motors, hydrostatic transmissions, circuit design, proportional and servo valves, Two –Stage electro hydraulic servo valves: Static and dynamic characteristics, Design of electrohydraulic systems, Closed loop response of electrohydraulic servo

systems – troubleshooting in fluid control systems, Computer aided design of fluid power systems applying AUTOMATION STUDIO Software.

MECH 400 Summer Internship (1 Credit)

Prerequisite: Senior standing

This is an eight to twelve-week professional training course in mechanical engineering.

MECH 434 Mechanical Vibrations 3(3, 0, 0)

Prerequisite: MECH 220, MATH 202

A course on free and forced response of non-damped and damped system; damping vibration absorption; response of discrete multi-degree of freedom systems; modal analysis; vibration measurement, case studies, vibration analysis with Matlab and Simulink.

MECH 437 Turbo Machinery 2(2, 0, 0)

Prerequisite: MECH 210, MECH 341

This course applies the thermal and fluid sciences to the design of pumps, fans, compressors, and turbines. Similarity and scaling laws are developed. Radial and axial flow machines are analyzed. Blade design for both pumps and turbines are considered. Design of centrifugal pumps and axial flow compressors is studied.

MECH 442 Thermal Desalination Systems 3(3, 0, 0)

Prerequisite: MECH 341, MECH 342

Seawater composition. The need for water desalination. Classification of desalination processes. Single effect evaporation. Thermal vapor compression systems. Multiple effect evaporation. Multistage flash distillation, once through MSF, Brine mixing and recirculation MSF. Reverse osmosis. Desalination using renewable energy sources. Economic analysis of desalination processes.

MECH 443 Energy Conversion 3(3, 0, 0)

Prerequisites: MECH 310, MECH 342

This course covers three aspects of energy: Energy resources, Energy Conversion, Development, and environment. Energy Sources: Fossil fuels including, petroleum, coal, oil shale and tar sand, natural gas and hydrogen power. Renewable energy sources including: solar, wind, biomass, hydroelectric and geothermal. Energy Conversion: Conversion of thermal energy into electrical power including thermoelectric converters and fuel cells, thermoelectric systems, electric generators and alternators. Development and environment: implications for sustainable development: Technical, economic, ethical and philosophical aspects of sustainable development, Environment and sustainable development at urban, national and international levels.

MECH 490 Dynamic Systems and Control 3(3, 0, 0)

Prerequisites: MECH 220, MECH 308 and MECH 352

This course is intended to provide students with the tools that enable them to model and control physical systems. It includes the following: modeling of mechanical, fluid, electrical, and thermal systems; transfer function and block diagrams; time-domain analyses; root-locus; frequency-domain methods; stability analysis; design of PID controllers and dynamic compensators via the root locus and frequency methods.

MECH 491 Dynamic Systems and Control Laboratory 1(0, 0, 2)

Co-requisites: MECH 490

This course involves a series of hands-on experiments on modeling and design of control systems using Matlab, Simulink, and/or LabVIEW. The course also includes a team project.

MECH 498 Final Year Project I (1 Credit)

Prerequisite: Senior Standing

A supervised project in groups of normally three students aimed at providing practical experience

in some design aspects of mechanical engineering. Students are expected to complete a literature survey, to critically analyze, and to acquire the necessary material needed for their intended end product.

MECH 499 Final Year Project II (3 Credits)

Prerequisite: MECH 498

A course in which the student integrates his/her acquired knowledge to deliver the product researched and planned in MECH 401.

General Electives:

MECH 430 Product Design and Development 3(3, 1, 0)

Prerequisites: MECH 320 and MECH 330

This course covers modern tools and methods for product design and development. Teams of students conceive, design, and prototype a new physical product. Topics include identifying customer needs, product planning, product specifications, concept generation, industrial design, product architecture, product development economics, and design-for-manufacturing.

MECH 431 Manufacturing Processes II 3(2, 0, 2)

Prerequisite: MECH 360

A course on heat treatments, deformation, phase-change, and particulate consolidation processing of metals; fabrication processing of non-metallic engineering materials such as ceramics, polymers, and composites; emphasis on process capabilities and limitations, relative cost, and guidelines for process selection; the behavior of materials under processing conditions; design for manufacturing guidelines. This course emphasizes hands-on training exercises.

MECH 432 Mechanical CAD/CAE/CAM 3(2, 0, 2)

Prerequisites: MECH 330, and MECH 360

This course seeks to expose the senior ME students to the realm of computer-aided design (CAD), computer-aided engineering (CAE), and computer-aided manufacturing (CAM); geometric modeling; numerical control; dimensioning and tolerancing; statistical tolerancing; process selection; metrology.

MECH 444 Internal Combustion Engines 3(3, 0, 0)

Prerequisites: MECH 310

The course aims to give the student the theoretical background of internal combustion engines. It includes: description of engine classification and parts, Combustion and ignition processes, engine parameters and tests, analysis of two-stroke and four stroke internal combustion engines, rotary engines and thermodynamic cycle analysis, thermochemistry and fuel characteristics;

MECH 446 Gas Turbines 3(3, 0, 0)

Prerequisite: MECH 342

A course that introduces the thermodynamic and aerodynamic theory forming the basis of gas turbine design: shaft power cycles; gas turbine cycles for aircraft propulsion; turbofan and turbojet engines; design and analysis of centrifugal and axial flow compressors and turbines.

MECH 447 Steam Turbine 3(3, 0, 0)

Prerequisite: MECH 342

A course that deals with impulse and reaction steam turbines, steam turbine cycles, flow of steam in nozzles, design aspects of turbines stage losses and efficiency, velocity diagrams; and impulse and reaction blading velocities; nucleation, condensation, and two-phase phenomena in flowing steam; boiler room and its various equipment; the complete steam power plants; governors, electric generator, and power transmission lines.

MECH 448 Refrigeration Systems 3(3, 0, 0)

Prerequisite: MECH 342

The course provides a thorough knowledge in the following subjects: review of basic concepts in thermodynamics and heat transfer in buildings, psychometric, human comfort, air-conditioning processes, ventilation and infiltration, heating and cooling load calculations, hot water heating systems, fans and duct design.

MECH 449 Air Conditioning Systems 3(3, 0, 0)

Prerequisite: MECH 342

This course covers fundamental concepts and principles of mechanical vapor compression refrigeration cycles; gas cycle refrigeration; ultra-low- temperature refrigeration, cold storage refrigeration; functions and specifications of refrigeration equipment, applications.

MECH 451 Solar Energy 3(3, 0, 0)

Prerequisite: MECH 342

This course discusses the fundamentals of solar radiation, collectors and concentrators, energy storage, estimation and conversion formulas for solar radiation.

MECH 452 Power Plants 3(3, 0, 0)

Prerequisite: MECH 342

The course includes topics in steam turbine; coal and oil burners, waste heat recovery, efficiency improvement, steam condensers and cooling towers, gas turbines, hydraulic power plants and water turbines, Nuclear power plants, technology cooling, control and nuclear wastes management, power plants economics.

MECH 453 Introduction to Renewable Energy Systems 3(3, 0, 0)

Prerequisite: MECH 308, MECH 342

Introduction, Energy: Past, Today, and Future. Energy & Environment, Non-renewable energies. Solar Energy basics of Solar Energy, Photovoltaic, wind energy (resources, turbines, power calculations and Weibull distribution. Geothermal Energy, Ocean Energy.

MECH 460 Finite Element Methods in Mechanical Engineering 3(3, 0, 0)

Prerequisites: MATH 201, MECH 231

A course on the classification of machine components; displacement-based formulation; line elements and their applications in design of mechanical systems; isoparametric formulation; plane stress, plane strain, axi-symmetric, and solid elements and their applications; modeling considerations and error analysis; introduction to ALGOR general formulation and Galerkin approach; and analysis of field problems.

MECH 470 Mechanics of Composite Materials 3(3, 0, 0)

Prerequisites: MECH 232

This course covers anisotropic elasticity and laminate theory, analysis of various members of composite materials, energy methods, failure theories, and micromechanics. Materials and fabrication processes are introduced.

MECH 496 Special Topics in Mechanical Engineering 3(3, 0, 0)

Prerequisite: discretion of advisor

Any selected topic in the state-of-the-art in Mechanical Engineering.

Mechatronics and Robotics Electives:

MECH 420 Advanced Mechatronics and Robotics 3 (2, 0, 2)

Prerequisites: MECH 355

Part of Mechatronics includes signal processing, logic and digital circuits, Data acquisition, Microprocessor and Microcontroller, and applications of mechatronics systems. Part of Robotics include kinematics and inverse kinematics, velocity kinematics – The manipulator Jacobian, manipulator dynamics, manipulator-mechanism design, different types of robots, and some cases studies. Executing some experiments in Mechatronics and Robotics Laboratory. Implementation of some mini projects.

MECH 430 Product Design and Development 3(3, 0, 0)

Prerequisites: MECH 320, MECH 330

This course covers modern tools and methods for product design and development. Teams of students conceive, design, and prototype a new physical product. Topics include identifying customer needs, product planning, product specifications, concept generation, industrial design, product architecture, product development economics, and design-for-manufacturing.

MECH 432 Mechanical CAD/CAE/CAM 3(2, 0, 2)

Prerequisites: MECH 330, MECH 360

This course seeks to expose the senior ME students to the realm of computer-aided design (CAD), computer-aided engineering (CAE), and computer-aided manufacturing (CAM); geometric modeling; numerical control; dimensioning and tolerance; statistical tolerance; process selection; metrology.

MECH 433 Mechatronics System Design 3(2, 0, 2)

Prerequisites: MECH 355

A course that discusses mechatronics; data; numbering systems, architecture of microcontrollers, assembly language programming, A/D and D/A conversion; parallel I/O, programmable timer operation, interfacing sensors and actuators, applications; a team project on design and implementation of a mechatronic system.

MECH 440 Intelligent Control of Robotic Systems 3(2, 0, 2)

Prerequisites: MECH 355, MECH 490

This course includes Introduction to classical and intelligent control systems, intelligent systems and applied artificial intelligence, intelligent control concepts, Artificial neural networks: Definition and structures, Introduction to fuzzy logic. Intelligent control in MATLAB/SIMULINK. Applications to mechanical, mechatronics and robotics systems. Executing some experiments in Mechatronics and Robotics Laboratory.

MECH 460 Finite Element Methods in Mechanical Engineering 3(2, 0, 2)

Prerequisites: MECH 201, MECH 331

A course on the classification of machine components; displacement-based formulation; line elements and their applications in design of mechanical systems; isoperimetric formulation; plane stress, plane strain, axis-symmetric, and solid elements and their applications; modeling considerations and error analysis; introduction to ALGOR general formulation and Galerkin approach; and analysis of field problems.

MECH 470 Mechanics of Composite Materials 3(3, 0, 0)

Prerequisites: MECH 232

This course covers anisotropic elasticity and laminate theory, analysis of various members of composite materials, energy methods, failure theories, and micromechanics. Materials and fabrication processes are introduced.

MECH 481 Computer-Integration Manufacturing Systems 3(3, 0, 0)

Prerequisites: MECH 201, MECH 360

This course is intended to expose students to modern manufacturing and automation principles with a specific focus on CIM and engineering integration issues (both concepts as well as hands-on practice). CIM environment; CIM benefits; Business perspectives for CIM; objectives of manufacturing business; the business characteristics of CIM systems; components of a CIM architecture; simulation, group technology; networks; concurrent engineering; decision support systems; expert system; CAD/CAM; information and material flow in manufacturing; modeling methodology and related tools in analysis and design of CIM for medium size companies.

MECH 485 Industrial Robotics 3(2, 0, 2)

Prerequisites: MECH 355

This course will cover the principles and techniques involved in industrial robotics. Emphasis will be placed on industrial robot applications, analysis of robot manipulators, components of industrial robots, robot programming and control. Students will explore the use of robotics and machine learning in the efficiency of industrial processes. Students will model, design, plan, program, select, and implement industrial robot systems.

MECH 492 Special Topics in Mechatronics & Robotics 3(2, 0, 2)

Prerequisites: MECH 355

Any selected topic in the state of the art of Mechanical Engineering.

COLLEGE OF GRADUATE STUDIES AND SCIENTIFIC RESEARCH

DEANSHIP OF GRADUATE STUDIES AND SCIENTIFIC RESEARCH

Officers

Acting Dean: Nadim Shbeeb

Council Memebers: Nadim Shbeeb, Ali Eyadeh, Ijaz Ali, Mohammad Hujooj, Rola Ramez, Abdullah Alali, Yousaf Ali, and Amer Abu Omar

College Overview

The College of Graduate Studies (CGS) was established in 2009 to satisfy the needs for postgraduate education in the region of Tabuk. The college currently offers seven graduate programs in Business and Management, Engineering and Computer Science listed below

- Master Program in Business Administration (MBA).
- Executive Master Program in Business Administration (EMBA).
- Master of Human Resource Management (HRM)
- Master program in Civil Engineering.
- Master program in Electrical Engineering.
- Master Program in Computer Engineering.
- Master program in Computer Science.

Vision

To be among the leaders of Saudi private universities in inspiring advance knowledge, fostering research collaboration across disciplines, addressing global challenges, promoting ethical conduct in research and ensuring the responsible application of research findings to contribute to the betterment of the Kingdom.

Mission

To cultivate a dynamic and transformative graduate learning environment that nurtures intellectually curious scholars, fosters research, and empowers graduates to become qualified researchers in their chosen fields and contributers to the advancement of knowledge, societal progress, and the Kingdom of Saudi Arabia's Vision 2030.

We are committed to the following:

- Providing a rigorous and research-intensive graduate education: Offering a comprehensive range of master's programs that challenge students to think critically, explore new ideas.
- Fostering a culture of collaboration and interdisciplinarity: Encouraging cross-disciplinary research, collaboration, and knowledge exchange, breaking down silos and fostering a vibrant intellectual environment.
- Attracting and supporting top-tier faculty: Recruiting and retaining the brightest minds from around the world, providing them with world-class research facilities, resources, and mentorship.

- Preparing graduates for impactful careers: Equipping graduates with the skills, knowledge, and leadership qualities to excel in academia, industry, and government, making a meaningful difference in the world.
- Aligning research with the Kingdom's Vision 2030: Supporting research that addresses national priorities, contributing to the Kingdom's transformation into a knowledge-based economy and a global leader in innovation.
- Maintaining the highest ethical standards: Upholding the highest ethical standards in all aspects of graduate education and research, promoting honesty, integrity, and responsible conduct.

Core Values

- Academic Excellence
- Intellectual Curiosity and Innovation
- Rigorous Research and Scholarship
- Interdisciplinary Collaboration
- Global Engagement and Impact
- Mentorship and Professional Development
- Ethical Conduct and Integrity

College Objectives

- Provide students with an in-depth understanding of the literature in the functional areas of their selected disciplines.
- Build research skills of students and give them opportunities to utilize the acquired skills to develop original ideas.
- Enhance the analytical skills of students to allow them develop informed judgment, independent thinking, and objective inquiry.
- Enrich students' knowledge about contemporary issues in their respective fields of study.
- Offer advanced courses, beyond the baccalaureate level, in various disciplines;
- Contribute to the advancement of knowledge for the benefit of a constantly changing Tabuk Community through the efforts of faculty and students.

Admission Requirements:

For admission to the graduate programs, applicants must:

1. Hold a Bachelor's degree in the major, or a very related field (may be accepted with some conditions) from an academic institution accredited/recognized by the KSA's Ministry of Education (MOE) with a minimum ranking/rating of "Good": 2.75/5 or 1.75/4. However, applicants with a rating of "Poor": can be accepted if approved by the Council of Graduate Studies if the applicant show minimum of three years experiences in his/her field.
2. Provide at least three signed and sealed letters of recommendation from the faculty who taught the applicant undergraduate courses.
3. Satisfy any additional admission requirements of the applied to program.

The College of Graduate Studies and Research accepts candidates on a competitive basis as seats are limited. Criteria for selection include, but are not limited to, competitive GPA, English proficiency, work experience and supportive references.

MASTER OF BUSINESS ADMINISTRATION (MBA)

Introduction

The economic growth in the Kingdom in general and Tabuk in particular necessitates a cadre of high-quality managers who can contribute effectively to the economic development strategies of the private as well as the public sectors.

The MBA Program at FBSU has been designed to provide an advanced business education for highly motivated Bachelor degree holders, mid-level managers and professionals in order to boost their performance, efficiency, and productivity in a variety of organizational settings. In addition, it has been tailored to build the necessary knowledge and skills for entrepreneurs to launch new businesses or improve existing ones.

Program Objectives

The MBA program at FBSU aims to provide students with the knowledge and skills that enable them to function as successful managers, leaders and entrepreneurs in the dynamic and globalized Saudi economy during the third millennium.

The MBA Program intends to:

- Provide students with an in-depth understanding of the literature in the functional areas of business.
- Develop the managerial capabilities of students on the basis of the core functions and disciplines of business administration.
- Enhance the analytical, organizational, and communication skills of students to become effective managers in a variety of organizational settings.
- Elevate the leadership and decision-making abilities of students to enable them to encounter effectively contemporary challenges in an increasingly complex business environment.

Program Admission Requirements

In addition to satisfying the Deanship of Graduate Studies and Reseach admission requirements:

- Applicants must achieve a minimum score of 5.5 on the IELTS exam (about 500 in paper-based TOEFL or 61 in internet-based tests) or a minimum score of 75% on the University English placement exam.
- Applicants with non-business backgrounds are normally required to pass the foundation courses before starting the core courses.

Note: Students can also pursue the program on a part-time basis.

Program Structure

- The program is composed of a total of 42 credits to be offered over 4 semesters. This excludes the pre-requisite foundation module (a maximum of 15 credits) that will be offered to compensate for any deficiency in the students' knowledge. The grades of the Foundation module are not included in the cumulative GPA. Students must normally pass these courses before they can start Core courses.
- The degree requirements can be completed in four semesters (21 months of study).
- The program uses English language as the main medium of instruction.

MBA Program Plan of Study

Pre-MBA Foundation Courses (Credits not counted in GPA)		Credits
MBA 400	Introduction to Business Administration& Management	3
MBA 410	Principles of Microeconomics	3
MBA 420	Principles of Financial Accounting	3
MBA 430	Principles of Finance	3
MBA 440	Principles of Marketing	3
A Maximum of 15 credits depending on the background of the Applicant		**15**

First Semester (12 Credit Hours)

Course	Title	Credits
MBA 505	Organizational Behavior	3
MBA 510	Management Info. Systems	3
MBA 515	Quantitative Methods in Business	3
MBA 520	Managerial Accounting	3
	Total Credits	**12**

Second Semester (12 Credit Hours)

Course	Title	Credits
MBA 525	Managerial Economics	3
MBA 530	Marketing Management	3
MBA 605	Corporate Finance	3
MBA 610	Leadership & Enterprise	3
	Total Credits	**12**

Third Semester (9 Credit Hours)

Course	Title	Credits
MBA 615	Research Methods in Business	3
MBA 620	Management Info. Systems	3
	Elective Course	3
	Total Credits	**9**

Fourth Semester (9 Credit Hours)

Course	Title	Credits
	Elective Course	3
	Elective Course	3
MBA 690	Final Research Project	3
	Total Credits	**9**

Courses Description

Required Courses:

MBA 505 Organizational Behavior (3 Credits)

Prerequisite: MBA 400, if applicable

This course covers in-depth analysis of how the individual, the group, and the organization interact to influence the behavior of the corporate entity and that of its human resources. A focus on behavioral science applications to individual needs and organizational goals will be featured.

MBA 510 Management Information Systems (3 Credits)

This course is an overview of information systems from a managerial perspective. It covers basic information system concepts, applications of information systems, and building and managing information systems.

MBA 515 Quantitative Methods in Business (3 Credits)

This course applies quantitative methods to business problems with an emphasis on learning how to select the appropriate problem solving method, applying the chosen method, and translating the result into business strategy. Topics covered include the simplex method, linear programming, transportation models, and network models for project scheduling, in addition to other decision analysis tools. Students will be introduced to some related computer programs.

MBA 520 Managerial Accounting (3 Credits)

Prerequisite: MBA 420, if applicable

This course covers how management use accounting data in planning, coordinating, and controlling the operations of the firm. Topics covered include cost concepts, cost-volume-profit relationships, budgeting, variance analysis, cost systems, Activity-based Costing, cost accumulation and allocation, and costing systems.

MBA 525 Managerial Economics (3 Credits)

Prerequisite: MBA 410, if applicable

This course is concerned with the application of economic principles and methodologies to business decision problems. Students will increase their understanding of economics and learn a variety of techniques that will allow them to solve business problems relating to costs, prices, revenues, profits, and competitive strategies. The course is concerned with both theory and practice in the context of microeconomic models: the theory serves to sharpen analytical skills, and the practice will enable students to apply these techniques to real-world business problems.

MBA 530 Marketing Management (3 Credits)

Prerequisite: MBA 440, if applicable

This course provides the students with an overview of the managerial aspects of marketing including analyzing marketing opportunities, developing marketing strategies, making marketing decisions, and managing marketing programs.

MBA 605 Corporate Finance (3 Credits)

Prerequisite: MBA 430, if applicable

This course introduces the students to the various concepts of corporate finance, which facilitates the decision making of managers in financing, investment and dividend decisions. Topics covered include discounted cash flow analysis, risk and asset valuation and management, financial analysis and forecasting, capital budgeting, cost and structure of capital, and short and long term sources of funds.

MBA 610 Leadership & Entrepreneurship (3 Credits)

Prerequisite: MBA 505

This course introduces effective leadership theory and skills as key to individual and organizational success. It examines leader traits, abilities and behavior and relates them to entrepreneurial skills, performance and success.

MBA 615 Research Methods in Business (3 Credits)

This course introduces students to the methodology and mechanics of conducting applied business research with emphasis on field applications, including the design of research, data collection, analysis and reporting. Qualitative and quantitative research tools are covered.

MBA 620 Strategic Management (3 Credits)

Prerequisite: Completion of core courses adding up to at least 24 credits

This course deals with strategy formulation and implementation in a changing global environment. Strategy deals with the positioning the firm, articulating a vision, and designing action to take advantage of the firm's short and long-term competitive position. Students are expected to integrate the different functional areas covered in their graduate studies. Case studies are used extensively to strengthen the applied aspects.

Elective Courses:

MBA 630 International Business Management (3 Credits)

Prerequisite: MBA 505

This course is about managing effectively in different international environments. Conceptually, the course will revolve around the notion that differences exist in the way that management is practiced from country to country and that those differences can be attributed to two major sets of variables, namely: external environmental forces, such as economic, political, social and cultural elements found within each nation; and the organization's own cultural variables.

MBA 640 Operations and Production Management (3 Credits)

Prerequisite: MBA 515

This course is concerned with the processes of producing and delivering goods and services. The focus is to ensure the business operations are efficient in terms of the use of resources and in meeting customer needs. The aim is to give students a set of frameworks and concepts that can be used to understand the operations functions and strategies within a company. Topics to be covered include process analysis, quality management, inventory management, and supply chain management, waiting line analysis, demand forecasting, and project management.

MBA 642 Organization theory, Design and Change (3 Credits)

Prerequisite: MBA 505

This course aims to show students how structures can be designed to fit the organization's strategy, size and innovation needs. Different kind of structures (functional, divisional, matrix, organic networks) are analysed, and the situations in which each structure is effective are explained using examples and case studies. Additionally, the course will touch on Organisational Change, an important topic that is needed by managers during restructurings, mergers and acquisitions.

MBA 644 Managing Organizations and People (3 Credits)

Prerequisite: MBA 505

This course is intended to help students understand and appreciate the strategic role of Human Resource Management. It introduces them to both the methods and practices relating to the key functions and activities of human resource management, and seeks to develop a critical understanding of the role and functions of human resource activities within an organizational context. A range of topics will be examined such as: Planning for Human Resources, Job Design, Managing Employee Performance, Managing Pay and Compensation, and Managing Diversity.

MBA 646 Human Resource Development and Planning (3 Credits)

Prerequisite: MBA 644

This course examines the primary role of human resources development (HRD) in the organization to help people and organizations effectively manage change. This course focuses on strategies for assessing, designing, and implementing training and organizational development efforts that positively impact the performance of the individual and the work group. It also provides an overview of change interventions, including training and staff development; succession planning and performance management.

MBA 648 Special Topics in HRM (3 Credits)

Prerequisite: MBA 644

The Special Topics in HRM is a specialized course intended to reinforce the student‘s knowledge in this functional area of Business Administration. The topics to be included are usually not offered in one of the regular core or other elective courses. Through a combination of lectures, case studies and independent reading, the course aims to expand the students' knowledge of the related concepts and applications.

MBA 652 Consumer Behavior (3 Credits)

Prerequisite: MBA 530

This course examines the underlying dynamics of customer behavior drawing from a wide range of behavioral sciences concepts. It analyses the role of individual (e.g., perception, motivation, attitudes) and environmental (e.g., culture, social groups, the family) factors in the buying decision process. The focus of the course is on practical implications of this knowledge for the marketer. Key to the course is demonstrating how an understanding of buyer behavior can help to improve strategic decision making.

MBA 654 Strategic Marketing (3 Credits)

Prerequisite: MBA 530

The objective of this course is to demonstrate the benefits of undertaking marketing actions from a strategic context. The aim is to teach students how to conduct a complete audit of the marketing environment facing the firm, understand how to generate new marketing options and use the marketing mix and management strategies to maximize the market performance of the organization, regardless of its status as a commercial, government or social enterprise.

MBA 656 Marketing Research (3 Credits)

Prerequisite: MBA 530

The course is an overview of the application of scientific research methods to solve marketing problems. It stresses the need for building a marketing decision that is based on a sound marketing research and plan. It examines issues involving trends, factors, and forces (institutions, culture, politics, law, and environment) which affect companies' marketing programs (customer satisfaction, branding, corporate image, communication strategies). Steps include defining the problem to developing an approach, to formulating a research design, and designing questionnaires. Case studies and a research project are used to explore the different dimensions of the problems and opportunities facing the firm when formulating and implementing their marketing strategies.

MBA 658 Cost Accounting (3 Credits)

Prerequisite: MBA 520

This course involves in-depth study of the techniques and theories used in managerial accounting. Topics relating to the implementation and control of management decisions, capital budgeting, manufacturing accounting, management control systems, performance measurement, performance evaluation, transfer pricing, and cost prediction and control are emphasized. The impact of technology and new operating philosophies on integrated accounting systems are also explored.

MBA 662 Auditing (3 Credits)

Prerequisite: MBA 520

This course is planned to cover the fundamentals of auditing principles and procedures under generally accepted auditing standards. Auditor's reports, professional ethics and legal responsibilities, EDP considerations, statistical sampling, applications in auditing, the role of internal control in relation to the auditor and substantive audit procedures of assets, liabilities and equity capital will be reviewed. Communication of auditor findings to applicable parties will also be studied.

MBA 664 Financial Statements Analysis (3 Credits)

Prerequisite: MBA 520

The course aims at describing the process of analyzing and interpreting financial statements, and its role in the evaluation of the firm's financial performance and the prediction of its future condition. Topics covered include objectives of financial statement analysis, standards for financial statement analysis, sources of information, issues related to evaluating the quality of a company's earnings, horizontal analysis, trend analysis and vertical analysis, ratio analysis, and comprehensive evaluation of a company's financial situation.

MBA 666 Financial Markets & Institutions (3 Credits)

Prerequisite: MBA 605

This course offers an analysis of existing financial systems, money and capital markets, banks and non-bank financial intermediaries, term structure of interest rates, and securities markets including the stock and bond exchanges. It introduces the role of risk management in the financial institutions industry. The course focuses on the emerging money and capital markets in the Arab Gulf region.

MBA 668 Investment Analysis (3 Credits)

Prerequisite: MBA 605

This course covers portfolio selection theory and security valuation models. It provides a comprehensive coverage of basic concepts, theories, applications and decision-making rules in financial investments. In particular, the course will focus on the analysis of stocks, bonds, financial futures, options and other derivatives. Additionally, the course will examine the role and performance of portfolio managers, mutual funds and other investment companies.

MBA 672 Financial Risk Management (3 Credits)

Prerequisite: MBA 605

The course aims to develop an understanding of the key risks facing financial organisations, the ways they manage the risks and the role capital plays in buffering the risks. The course complements and builds on other finance-related subjects by providing a more in-depth examination of specific topics. From a practical perspective, the course assists managers in assessing their company's banking relationships as well as managing internal financial risks.

MBA 674 Information Management (3 Credits)

Prerequisite: MBA 510

This course provides an understanding of the issues in managing database systems as an essential organizational resource. Students learn the enterprise data architecture components, data storage configurations, and information retrieval methods. Focus will expand from the relational model to the multidimensional model, and include object-relational techniques, data security and data recovery.

MBA 676 Analysis & Design of Information Systems (3 Credits)

Prerequisite: MBA 510

In today's business environment, information systems are continuously being developed, updated, or reengineered. This course is designed to enable students to understand the analysis and design of IS systems as well as the requirements or expectations for these systems from different perspectives so as to have systems that can be more effective in organizations.

MBA 678 Management Support Systems (3 Credits)

Prerequisite: MBA 510

This course is designed to enable business managers to understand the application of decision support systems in making timely and accurate business decisions. It also serves to encourage the usage of decision support systems by business managers. Supportive information systems are also examined from comparative and complimentary perspectives.

MBA 690 Final Reseach Project (3 Credits)

Pre-requisite: Graduation Semester

In partial fulfillment of the requirements for the MBA degree, a student must carry out individually a Final Project (FP); MBA 690; equivalent to 3 credits, during the last semester of his/her studies. The project entails the application of the concepts learned in the program to address a real management issue on behalf of an organization. It must show adequate analysis and creative problem solving techniques. The scope and nature of the assignment will be agreed upon with the client through a proposal process. The students may also submit a case study.

EXECUTIVE MASTER OF BUSINESS ADMINISTRATION (EMBA) PROGRAM

Background

The Executive MBA Program is crafted to provide top-notch business education to mid and senior-level managers in both private and public sectors. This intensive program empowers participants to gain conceptual knowledge and enhance decision-making skills, thereby improving their on-the-job performance in a complex business environment. Through case analyses and simulations, participants experience a seamless transfer of skills and knowledge from the classroom to the workplace, with a particular focus on the current and future needs of Saudi and international firms throughout the Kingdom. Consequently, participants can swiftly reap personal and professional rewards, with their contributions acknowledged through increased responsibilities, promotions, and personal satisfaction.

Program Objectives

FBSU's EMBA program will strive to:

- Enhance the general managerial capabilities of participants by building upon the core functions and disciplines of business administration.
- Develop leaders and entrepreneurs with a clear strategic vision, strong critical analytical skills, a problem-solving orientation and a broad sensitivity to global issues.
- Strengthen the leadership, creative and teamwork skills that would sharpen the participants' competitive edge, and add value to their organizations.

Program Admission Requirements

In addition to satisfying the Deanship of Graduate Studies and Reseach admission requirements, the applicant must satisfy the following conditions:

- Hold a Bachelor's degree in any field from a KSA-accredited university
- Have at least three years of work experience in a middle or upper management position.
- Achieve a score of at least 5 in the IELTS exam or Pass the FBSU English Entrance Exam.

Program Structure

The program is composed of a total of 42 credits divided over 8 semesters. This excludes the pre-requisite foundation module that covers Math and Computer skills, that are given at the beginning of studies. Lectures are scheduled on weekends twice per month. The degree requirements can be met in 21 months of study. The program uses both Arabic and English languages for instruction.

EMBA Program Structure & Plan of Study

Term	Module No.	Course No.	Module & Courses	Course Credits	Module Credits	Term Credits
			Pre-requisite: Basic Math & I.T. Skills	3 + 0		
1	1	Module 1. Foundation & Business Environment			10	10
		1	EMBA 500 – Graduate Studies in Business	1		
			EMBA 505 – Contemporary Business Environment	2		
		2	EMBA 510 – Business Mathematics	2		
			EMBA 515 – Data Analysis	1		
		3	EMBA 525 – Managerial Economic Decisions	1		
			EMBA 520 – Financial Economics	1		
		4	EMBA 530 – Financial Accounting Decisions	1		
			EMBA 535 – Managerial Accounting Decisions	1		
2	2	Module 2. Business Communication			4	11
		5	EMBA 555 – Information and Communication Technologies	1		
			EMBA 560 – Managerial Communication	1		
		6	EMBA 565 – Business Negotiations	1		
		7	EMBA 550 – Business- Government Relations	1		
	3	Module 3. Functional Competency			7	
		8	EMBA 600 – Organizational Behavior &	1		
			EMBA 620 – Change Management	1		
		9	EMBA 605 – Strategic Marketing	1		
		10	EMBA 610 – Corporate Finance	1.5		
		11	EMBA 615 – Operations and Production Management	1		
			EMBA 660 – Project Management	1.5		
3	4	Module 4. Leadership& Entrepreneurship			10	10
		12	EMBA 670 – Management Skills Development	1.5		
		13	EMBA 675 – Leadership Development	1.5		
		14	EMBA 655 – Global Corporate Financial Decisions	1		
		15	EMBA 680 – Leadership and Entrepreneurship Lecture Series	1.5		
		16	EMBA 685 – Entrepreneurship Development	1.5		
			EMBA 690 – Global Entrepreneurship Project	3		
4	5	Module 5. Strategic Thrust & Application			11	11
		17	EMBA 650 – International Business Decisions	1.5		
			EMBA 699 – Current Business Challenges	1.5		
		18	EMBA 700 – Strategic Management Decisions	3		
		19	EMBA 665 – Business Research Methods	1.5		
			EMBA 695 – Management Consulting	1		
			EMBA 698 – Business Consulting Project	3		

Course Descriptions

EMBA 500 Graduate Studies in Business (1 Credit)
This course defines the frontiers of graduate studies in business administration with an emphasis placed on analyzing and developing business cases, performing secondary research using business databases such as Proquest, digesting scholarly papers published in journals such as Journal of Finance, importance of reading business magazines such as Harvard Business Review, and Economist, importance of reading business newspapers such as Financial Times, Wall Street Journal etc., and the use of American Psychological Association (APA) guidelines for the preparation of research projects. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 505 Contemporary Business Environment (1 Credit)
This course provides background information related to the field of business administration. Being a survey course, emphasis is placed to introduce the students to all functional areas of business with an emphasis on Saudi economy, and the Saudi corporate sector. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 510 Business Mathematics (2 Credits)
The analytical nature of EMBA course work requires that all candidates have a mathematical background in linear algebra, calculus, and general business mathematics. This course will be offered through a series of modules delivered through a combination of advanced web-based self-learning tools as well as classroom instruction in order to prepare participants for the mathematical components of the EMBA program. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 515 Data Analysis (2 Credits)
This course will provide an introduction to statistical data analysis for problem solving and decision-making using data. Participants will apply univariate and bivariate methods to various datasets, utilize software to analyze data and interpret statistical output. Statistical models and tools will be introduced to assist participants in collecting, organizing, understanding, analyzing, presenting and communicating data. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 520 Financial Economics (1 Credit)
This course covers fundamental economic principles, theories and models (both micro and macro); that business executives ought to know for managing firm's resources and for ensuring firm's economic security. Participants will acquire the skills to understand their economic environment and be able to predict how changes in global trends and government policy impact their sectors and particular businesses. EMBA participants will acquire the necessary conceptual skills to analyze the economic consequences of their decisions. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 525 Managerial Economic Decisions (1 Credit)
This course will provide participants with an interpretation and understanding of a broad range of economic concepts such as the Market Model, elasticity and pricing decisions, market structures and optimal managerial decisions, strategy and tactics in Game Theory, role of intellectual capital and Modern Growth Theory, Theory of Outsourcing, Aggregate Demand and Supply Models, IS-LM- BP model, international regulations' constraints as well as the theories of productivity. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 530 Financial Accounting Decisions (1 Credit)
This course will focus on the role of the accounting function external to the organization. It will take a broad view of financial accounting, encompassing a wide range of external financial and

economic information, both national and international. Financial statement ratios and other analytical tools will be introduced and applied in real-world corporate analyses. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 535 Managerial Accounting Decisions (1 Credit)
This course focuses on the role of the accounting function internal to the organization. It takes a broad view of managerial accounting, introducing participants to costing systems, cost behavior patterns, cost structures and the evaluation of product, managerial and divisional performance with accounting. The course emphasizes the strategic importance of aligning accounting systems with firm technologies and goals highlighting what accounting can do for decision-makers and how accounting choices affect decisions. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 550 Business-Government Relations (1 Credit)
The course is a primer on how business executives and other leaders can most effectively manage their organization's dealings with governments and the threats and opportunities presented by domestic and foreign, federal, provincial or local government legislation, regulation, policies or programs. It includes an examination of the various assumptions, considerations, strategies, tactics, analytical, advocacy and communications tools used by public-policy advocates; and the ethical and systemic issues associated with lobbying across Saudi Arabia and abroad. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 555 Information and Communication Technologies (1 Credit)
Executives are confronted with an information technology function that presents strategic opportunities and threats. This course will aim at better understanding the "management" aspects of information and communication technologies (ICTs). Participants will be introduced to information and communication technology foundations, systems development, database systems, enterprise resource planning, customer relationship management, decision support systems of IT management, social issues and learning and knowledge management, as well as IT and globalization to consider the impact of ICTs on business processes. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 560 Managerial Communication (1 Credit)
The course focuses on oral and written communication abilities of students. It allows them to respond to complete inter-personal and inter-group scenarios. The students will also learn about the techniques of structuring and delivering business-related contents in a logical and effective manner. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 565 Business Negotiations (1 Credit)
This course will aim to develop the aptitudes, intuitions and understandings of the strategies essential to successful business negotiations. A thorough analysis of the nature of negotiation, distributive and integrative bargaining, planning and preparation, intercultural differences, bargaining style and personality will be considered. The role of power, strategy and tactics will also be considered, including coalition behavior, communication, persuasion, conflict resolution and multi-party negotiation.

EMBA 600 Organizational Behavior (1 Credit)
This course will review the strategic advantage of understanding and integrating organizational behavior (OB) frameworks in designing and implementing effective human resources (HR) activities (namely recruitment, development, maintenance and retention of employees), in measuring performance and in achieving high-performance outcomes in Saudi organizational contexts. OB topics covered will include motivation, rewards, leadership, group dynamics, organizational politics, organizational design and corporate culture. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 605 Strategic Marketing (1 Credit)

This course will provide an overview of the marketing process, including key concepts, tools and procedures, in the context of a technology-intensive Saudi economy. Participants will analyze market opportunities, set performance goals and formulate marketing and implementation plans to meet those goals. Consideration will be given to trends and techniques like experience-based marketing, relationship marketing, and e-marketing. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 610 Corporate Finance (1.5 Credits)

The fundamental concepts of corporate financial management will be examined to emphasize that a realistic general management perspective requires supportive data and numerical calculations. Participants will be required to demonstrate their ability to analyze and think critically. Course content will cover both sides of the balance sheet with the analysis of both investment and financial decisions. Participants will consider the cost of capital, capital budgeting, cash flow analysis, capital structure decisions including common shares and long-term debt, financial planning and control, short-term financing, working capital management, treasury management, options, derivatives and hybrid financing. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 615 Operations and Production Management (1 Credit)

This course will examine framework for analyzing the behavior of complex supply chain networks, that exhibit a strategic understanding of the value of information and techniques to avoid the bullwhip effect, will examine the impact of supply chain strategic alliances and global sourcing as well as technologies and approaches used to reduce supply chain lead times. The course will also introduce the use of performance management tools and Business Intelligence Tools through the application of Business Intelligence software to specific cases. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 620 Change Management (1 Credit)

The purpose of this course will be to develop skills in the effective conceptualization, planning, implementation and evaluation of change interventions in human systems. Behavioral science frameworks will be introduced to explain and guide the practice of change in the organization. The systemic nature of change and intervention practice, including the generation and management of resistance to change, will be analyzed. Organizational change processes at the individual, team and organizational level and human system intervention efforts will be considered. The importance of context will be emphasized with cases of cross-cultural change, knowledge-based organizations, socio-technical change processes and system vs. cultural change analyses. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 650 International Business Decisions (1.5 Credits)

This course looks into the business activities aimed at directing the flow of a company's products to foreign markets. International business should be viewed as an integrated discipline that combines several other disciplines such as economics, management, marketing, finance, anthropology, cultural studies, history, demographics, languages, law, statistics, geography, and international trade. This course will stimulate intellectual curiosity on various critical issues and provide analytical frameworks that are necessary for understanding different cultural environments in global markets and assessing global business opportunities. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 655 Global Corporate Financial Decisions (1 Credit)

Participants will be introduced to the management of foreign exchange risk by corporate treasurers; financial management of multinational firms; determination of a corporation's transaction and operating exposures; use of foreign exchange derivatives such as currency futures, options and swaps, to hedge foreign exchange risk; international portfolio and direct investments; international

capital structure and cost of capital of multinational firms and capital budgeting techniques used for foreign operations. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 660 Project Management (1.5 Credits)
This course examines project management roles and environments, the project life cycle and various techniques of work planning, and control and evaluation to achieve project objectives. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 665 Business Research Methods (1.5 Credits)
The objective of this course is for participants to acquire and improve knowledge and understanding regarding how different fields of business theory relate to business administrative research methods. The course begins with a discussion of the knowledge-acquiring process where the creating of knowledge is emphasized. Frames of reference, scientific ideals and the choice of perspective are regarded as important bricks in the research process. This subject area will be followed by a thorough discussion regarding the choice of subject and the research question, where the importance of an extensive problem background is made clear. The chosen research question has methodological implications, and the possibilities and limitations of both quantitative and qualitative methods for the research question are discussed and exemplified. Participants will be exposed to statistical packages such as SPSS-X, LIZER and AMOS.

EMBA 670 Management Skill Development (1.5 Credits)
This course is focused on the development of skills needed to be effective and successful managers. Participants explore interpersonal communication, problem solving, decision-making, team dynamics, conflict resolution and negotiation. The impact of diversity, personal and national culture and emotional intelligence are considered. Emphasis is placed on developing managerial skills in participants for success on jobs. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 675 Leadership Development (1.5 Credits)
A course designed to develop leadership skills of participants by emphasizing the application of behavioral concepts and theory in leading an organization. Besides examining relevant leadership theories in Saudi context, it examines a scientific way of integrating the employees' interests with the goals/profit intentions of the organization. The course is expected to improve participants' leadership styles, human skills and team work initiatives. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 680 Leadership and Entrepreneurship Lecture Series (1.5 Credits)
This seminar will consist of a series of lectures by eminent Saudi business leaders and entrepreneurs from the public, private and civic/ not-for- profit sectors, who have had an opportunity to play a key role in the governance of Saudi business organizations. Expert leaders will discuss their success, failures and leadership styles in regard to the issue, while examining the organization's interest and the interest of the Saudi public. Cumulatively, lectures will provide a 360-degree perspective of a topical leadership and entrepreneurship issue.

EMBA 685 Entrepreneurship Development (1.5 Credits)
Participants will critically analyze the launch of a venture, from pre-start- up to start-up and early growth, through seed, start-up, development and execution stage (preparation for exit strategies such as IPO). Participants will be required to develop a winning business plan that leads to an enticing Investors Package for venture financing. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 690 Global Entrepreneurship Project (3 Credits)
This course will provide a thorough practical experience so that participants will develop a better understanding of global business and entrepreneurship abroad. During this field trip to a foreign destination, participants will be exposed to a series of expert presentations and company visits supporting the course objectives. The students will be required to present a report aiming at comparing various functional operations with that of the Saudi business environment and perhaps apply international business concepts to practical business situations solving. The field engagement will be completed through expert interviews at a foreign destination.

EMBA 695 Management Consulting (1 Credit)
This course will provide an introduction to management consulting: the five-phase consulting process and business models associated with managing a consulting practice. The course will take a broad view of consulting both internal and external to the organization to solve management problems. The course will focus on the skills and processes involved within a consulting engagement, including project planning, project management; data gathering and analysis; generating findings; and reporting, presentation and feedback, to prepare participants for the project engagements of the curriculum. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 698 Business Consulting Project (3 Credits)
The Business Consulting Project (BCP) is an integral part of the EMBA curriculum. This major independent consulting project will addresses a management issue on behalf of a client. Organizations are expected to be proven to be the source of career leaps and thriving new businesses. A faculty supervisor will be assigned to coach, mentor and assist the participant in the engagement. The scope and nature of the consulting assignment will be agreed upon with the client through a proposal process. The findings will be delivered to the client in terms of a presentation and a formal written report. Students will be exposed to relevant and latest simulations and software in the field.

EMBA 699 Current Business Challenges (1 Credit)
The theme and focus of this course would change with the passage of time, interests of the students, and the challenges being confronted by the Saudi and global economies.

EMBA 700 Strategic Management Decisions (3 Credits)
Providing an introduction to the concept of strategy and alternative models of strategic decision making, this course will require participants to understand the role of a leader in setting direction, creating competitive advantage, allocating resources, integrating operations and projects and framing the organizational infrastructure and its context. Students will be exposed to relevant and latest simulations and software in the field.

MASTER OF HUMAN RESOURCE MANAGEMENT (HRM) PROGRAM

Introduction

As many organizations claim that their employees are their most valuable assets, effective management of human resources is essential for their success. Human resources helps in structuring teams, building the organizations culture and people with engagement and development. It also enhances the productivity of employees.

Program Objectives

The program's objective is to acquaint participants with the significance of human resources management (HRM) concepts, elucidating core functions along with addressing the needs of workers. Additionally, it imparts knowledge, understanding, and essential skills essential for contemporary human resources professionals, empowering students to make effective contributions to dynamic organizations.

Program Admission Requirements

In addition to satisfying the Deanship of Graduate Studies and Reseach admission requirements, the applicant must satisfy the following conditions:

- Achieve a minimum score of 5.5 on the IELTS exam (about 500 in paper-based TOEFL or 61 in internet-based tests) or a minimum score of 75% on the University English placement exam
- Applicants with non-business backgrounds are required to pass the foundation courses with a minimum GPA of 3.75 out of 5 before starting the program.

Note: Students can pursue the program on a full or part-time basis.

Program Structure

The program is composed of 42 credit hours: 27 credit hours' compulsory (including 3 credit hours' project), and 15 credit hours of elective courses to be offered over 4 semesters. This excludes the pre-requisite foundation module (a maximum of 12 credits) that will be offered to compensate for any deficiency in the students' knowledge. The grades of the Foundation module are not included in the cumulative GPA. Students must normally pass these courses. The degree requirements can be completed in four semesters (21 months of study). The program uses the English language as the main medium of instruction.

Plan of Study

Pre-MBA Foundation Courses (Credits not counted in GPA)		Credits
BUSS 400	Introduction to Business Administration & Management	3
BUSS 410	Principles of Microeconomics	3
HRM 400	Human Resources Management	3
HRM 405	Organizational Behavior	3
A Maximum of 12 credits depending on the background of the Applicant		**12**

First Semester (9 Credit Hours)

Course	Title	Credits
HRM 501	Advanced Human Resources Management	3
BUS 505	Advanced Organizational Behavior	3
BUS 508	Research Methods in Business	3
	Total Credits	**9**

Second Semester (12 Credit Hours)

Course	Title	Credits
HRM 510	Managing Wages, Salaries, and Compensations	3
HRM 520	Human Resources Development and Planning	3
HRM 502	Labor Law	3
	One Elective Course	3
	Total Credits	**12**

Third Semester (12 Credit Hours)

Course	Title	Credits
HRM 515	Managing Employees Performance	3
HRM 518	Recruitment & Selection and Hiring	3
	Two Elective Courses	6
	Total Credits	**12**

Fourth Semester (9 Credit Hours)

Course	Title	Credits
HRM 555	Final Research Project	3
	Two Elective Courses	6
	Total Credits	**9**

Elective Courses:

Course	Title	Credits
HRM 525	International Human Resources Management (3 credits).	3
BUS 520	Leadership & Entrepreneurship	3
HRM 530	Special Topics in HRM	3
HRM 528	Human Resources Information Systems	3
HRM 535	Strategic Human Resources Management	3
HRM 509	Negotiation and Decision-Making Strategies	3
BUS 530	Strategic Management	3
HRM 538	Business Ethics and Corporate Social Responsibility	3
HRM 540	Managing Workforce Diversity	3

Courses Description

A) Core Courses

HRM 501 Advanced Human Resources Management (3 credits)

Prerequisite BUS 400, if applicable

The course introduces the fundamental aspects of human resources management and its main concepts in terms of recruitment, human resources planning, job analysis and description, employees training and development, compensation, performance appraisal, career development, and legal aspects of equal opportunities laws. Globalization and its impact on human resources management is also covered.

HRM 502 Labor Law (3 credits)

Prerequisite BUS 400, if applicable

The course focuses on the development of Saudi labor law, the constitutional framework, and the National Employment Standards. It covers legislation related to employment conditions, such as, hiring, working hours, vacation and termination of employment and regulations concerning equality. Upon completion, students should be able to evaluate organization policy for compliance and assure that decisions are not contrary to law.

BUS 505 Advanced Organizational Behavior (3 credits)

Prerequisite BUS 400, if applicable

The objectives of this course to expose students to the concept of organizational design, and the theoretical and applied aspects of organizational behavior. It covers in-depth analysis of how individuals, groups, and organizations interact to influence the behavior of the corporate entity and that of its human resources. Topics include personality, perception, attitudes, values, learning, organizational climate, leadership, creativity, communication and informal groups.

BUS 508 Research Methods in Business (3 credits)

The aim of this course is to identify the importance and role of scientific research in management studies and its analytical dimensions. It introduces students to various types of research and to the methodology and mechanics of conducting applied business research. It also covers the stages for research process with emphasis on field applications, including the design of research, data collection, analysis and reporting. Application of qualitative and quantitative research tools on selected topics in human resources management are also covered.

HRM 510 Managing Wages, Salaries and Compensations (3 credits)

Pre-requisite: HRM 501

The course covers alternative compensation philosophies. It focuses on the concept of performance appraisal and its criteria. It also addresses monetary and nonmonetary, direct and indirect compensation programs. The interrelationship between compensation, motivation, performance appraisal, and performance within the organization is examined.

HRM 515 Managing Employees Performance (3 credits)

Pre-requisite: HRM 501

This course explains and analyze the continuous process of identifying, measuring and developing performance in organizations by linking each individual's performance and objectives to the organization's overall mission and goals. It deals with the traditional and modern models, as well as strategies and methods of measuring the performance of individuals and their productivity. It also introduces models for calculating the return on investment of human assets in organizations.

HRM 518 Recruitment, Selection and Hiring (3 credits)

Pre-requisite: HRM 501

This course examines the concept of recruitment, internal and external sources of recruitment, methods of selection, and steps involved in selection process. The course also covers new trends and modern methods for recruitment and addresses the international standards for selection and hiring.

HRM 520 Human Resource Development and Planning (3 credits)

Prerequisite: HRM 501

This course examines the primary role of human resources development (HRD) in the organization to help people and organizations effectively manage change. This course provides knowledge and skills on how to determine the supply and demand of human resources succession planning. It also focuses on strategies for assessing, designing, and implementing training and organizational development efforts that positively impact the performance of the individual and the work group.

HRM 555 Final Research Project (3 credits)

Prerequisite: Fourth Semester

In partial fulfillment of the requirements for the MHR degree, a student may choose to pursue a project track, equivalent to 3 credit hours during the last semester of the his/her studies. The project should tackle a human resource managerial issue and through the application of the theories and methods learned during the study, the student should analyse qualitatively or/and quantitatively the issue and come up with a proper solution or justification. The methods and techniques used in the project should be consulted with the assigned academic advisor.

B) Elective Courses

HRM 525 International Human Resources Management (3 credits)

Pre-requisite: HRM 501

This course provides an introduction to the critical issues facing organizations in simultaneously managing their human resources at home and abroad. It focuses on the connection between corporate strategies and the effective management of human resources which, at times, may require differing policies between countries. The course is based on the notion that competitive firms and economies require appropriate structures, policies, and strategies for managing their employees at every level of the enterprise. This is particularly true of multinational enterprises (MNEs) and transnational corporations (TCs) intricately involved in a global environment.

BUS 520 Leadership & Entrepreneurship (3 credits)

Pre-requisite BUSS 505

This course primarily aims to help students develop effective and successful leadership techniques. It examines leader traits, abilities and behavior and relates them to entrepreneurial skills, performance and success.

HRM 530 Special Topics in HRM (3 credits)

Pre-requisite: HRM 501

The Special Topics in HRM is a specialized course intended to reinforce the student ‘s knowledge in this functional area of Business Administration. The topics to be included are usually not offered in one of the regular core or other elective courses. Through a combination of lectures, case studies and independent reading, the course aims to expand the students’ knowledge of the related concepts and applications.

HRM 528 Human Resources Information Systems (3 credits)

Pre-requisite: HRM 501

This course provides a basic overview of transformation of Human Resources in the digital age

and of various automated information systems that are available to support today's Human Resource Professional. The course will increase the student's ability and awareness to utilize modern systems and other automated processes. The course also explores other methods to increase recruiting, simplify interviews and permit easier employee or prospect access to an organization's human resource offices. The course also focuses on systems security and individual privacy as well as legal implications to users and organizations.

HRM 535 Strategic Human Resources Management (3 credits)

Pre-requisite: HRM 501

This course introduces the technical and legal aspects of human resource management from a strategic business perspective. The course examines how to manage human resources effectively in the dynamic legal, social and economic environment currently constraining organizations. Among the topics included are: formulation and implementation of human resource strategy; job analysis; methods of recruitment and selection; techniques for training and development; performance appraisal; compensation and benefits; and evaluation of the effectiveness of HRM systems. Emphasis is placed on integrating human resource management with overall business strategy.

HRM 509 Negotiation and Decision Making Strategies (3 credits)

Pre-requisite: HRM 501

This course helps students develop a systematic approach to negotiation, enabling them to formulate and apply the instruments of negotiation strategy and tactics, recognize and overcome flaws in their negotiation and decision making processes. The course also helps students develop frameworks for making sound decisions; analyze situations; create plans to monitor, improve, and practice their negotiation and decision making skills.

BUS 530 Strategic Management (3 credits)

Prerequisite: Completion of at least 24 graduate credits of core courses

This course deals with strategy formulation and implementation in a changing global environment. Strategy deals with the positioning the firm, articulating a vision, and designing action to take advantage of the firm's short and long-term competitive position. Students are expected to integrate the different functional areas covered in their graduate studies. Case studies are used extensively to strengthen the applied aspects.

HRM 538 Business Ethics and Corporate Social Responsibility (3 credits)

Prerequisite BUS 400, if applicable

The ultimate intent of the course is to leave students better equipped to identify, think critically about, and resolve ethical issues that are encountered in one's working life at the individual, organizational, and societal levels. It examines ethical Decision-Making process, stakeholders' theory, ethical and Corporate Social Responsibility theories and develop students' interest and abilities in recognizing and analyzing the ethical dimensions of real-world situations.

HRM 540 Managing Workforce Diversity (3 credits)

Prerequisites: HRM 501, BUSS 505

Foundational information concerning a diverse/multicultural society. Importance of understanding cultural and demographic similarities/differences and how this information relates to the workforce and to education/training environments. Social diversity issues of current importance to workforce preparation and development of diversity training are included. The course also develops leadership competencies and skills to manage diversity effectively.

MASTER OF CIVIL ENGINEERING PROGRAM

Introduction:

The Master of Science in Civil Engineering program at FBSU equips graduates with the knowledge, analytical skills, and creative thinking abilities to design and implement sustainable solutions for the built environment. The program emphasizes lifelong learning to prepare graduates for the ever-evolving challenges faced by the civil engineering profession. Graduates emerge with strong communication, critical thinking, interpersonal, and management skills, positioning them as leaders and contributors in their field.

The Master of Science in Civil Engineering program at FBSU embraces three different areas of specialization tracks, namely:

- Master of civil engineering/Structural Engineering (Thesis option and Non-thesis option)
- Master of civil engineering /Transportation Engineering (Thesis option and Non-thesis option)
- Master of civil engineering/Construction Engineering and Management (Thesis option and Non-thesis option)

The program offers research opportunities and advanced courses in a broad range of the aforementioned areas. The student may transfer from one track to another, or from one option to another (thesis or non-thesis) after the first semester of the study.

Program Objectives:

Graduates will be prepared to adapt and thrive in the ever-evolving civil engineering profession.The Master of Science in Civil Engineering program at FBSU aims at applying knowledge, strong reasoning, and quantitative skills to design and implement creative and sustainable solutions. It also helps graduate students to engage in life-long learning to meet evolving engineering challenges facing society. Furthermore, they are expected to exhibit strong communication, critical thinking, interpersonal, and management skills as leaders and contributors in the civil engineering profession. In bullets, the program objectives are:

1. Develop expertise in advanced civil engineering concepts and principles.
2. Enhance analytical and problem-solving skills.
3. Foster creativity and innovation in sustainable infrastructure design.
4. Cultivate strong communication, interpersonal, and leadership skills.
5. Prepare for lifelong learning and professional development.

Program Admission Requirements:

To be admitted to the program, the applicant must satisfy the College of Graduate Studies and Scientific Research admission requirements.

Program Structure

The program is composed of two tracks; thesis track and non-thesis track. Thesis track has 39 credit hours, distributed over 4 semesters; 27 credits in the form of courses, and 12 credits for the thesis. The Non-Thesis track is composed of 42 credit hours, also distributed over 4 semesters.

Study Plan

1) Thesis Track[6] (39 credit hours)

The program is composed of 39 credit hours to be offered over 4 semesters; 27 credits as taught courses and 12 credits for the thesis. (See the list of core courses and elective courses) as follows:

Semester 1
Core Course - 3 hours
Core Course - 3 hours
Core Course - 3 hours
Total: 9 Credit Hours

Semester 2
Elective Course - 3 hours
Elective Course - 3 hours
Elective Course - 3 hours
CIVE 599 (Seminar) - 3 hours
Total: 12 Credit Hours

Semester 3
Elective Course - 3 hours
Master thesis - 6 hours
Total: 9 Credit Hours

Semester 4
Elective Course - 3 hours
Master thesis - 6 hours
Total: 9 Credit Hours

2) Non-Thesis Track (42 credit hours)

This program is composed of 42 credit hours to be offered over 4 semesters as follows:

Semester 1
Core Course - 3 hours
Core Course - 3 hours
Core Course - 3 hours
Total: 9 Credit Hours

Semester 2
Elective Course - 3 hours
Elective Course - 3 hours
Elective Course - 3 hours
CIVE 599 (Seminar) - 3 hours
Total: 12 Credit Hours

Semester 3
Elective Course - 3 hours
Elective Course - 3 hours
Elective Course - 3 hours
Elective Course - 3 hours
Total: 12 Credit Hours

Semester 4
Elective Course - 3 hours
Elective Course - 3 hours
Project - 3 hours
Total: 9 Credit Hours

Core and Elective Courses

A) Core Courses (For all majors)

Course ID	Course name	Credits
MATH 505	Advanced Engineering Mathematics	3
MATH 506	Advanced Engineering Statistics	3
CIVE 507	Computer Application in Civil Engineering	3
CIVE 598	Engineering Design Project (Non-Thesis Option only)	3
CIVE 599	Seminar	3
CIVE 600-A	Research Thesis (Thesis-Option only)	3
CIVE 600-B	Research Thesis (Thesis-Option only)	3
CIVE 600-C	Research Thesis (Thesis-Option only)	3
CIVE 600-D	Research Thesis (Thesis-Option only)	3
CIVE 600-E	Research Thesis (Thesis-Option only)	0

[6] The student shall submit a thesis proposal to the department Chair during the first 8 weeks of the second semester in order to be approved and accepted by the end of the semester.

B) Elective Courses

1. Structural Engineering Track

Course ID	Course Name	Credits
CIVE 510	Advanced Reinforced Concrete	3
CIVE 511	Evaluation And Testing Of Concrete Structures	3
CIVE 512	Concrete Materials	3
CIVE 513	Advanced Structural Mechanics	3
CIVE 514	Advanced Structural Analysis	3
CIVE 515	Earthquake Engineering	3
CIVE 516	Behaviour And Design Of Steel Structures	3
CIVE 517	Finite Elements Methods	3
CIVE 518	Pre-Stressed Concrete	3
CIVE 519	Special Topics In Structural And Material Engineering	3
CIVE 581	Construction Engineering, Equipment, and Methods	3
CIVE 582	Advanced Project Management	3
CIVE 584	Construction Cost Estimating and Bidding	3

2. Transportation Engineering Track

Course #	Course Name	Credits
CIVE 570	Advanced Transportation Engineering	3
CIVE 571	Pavement Structures And Design	3
CIVE 572	Urban Transportation Planning	3
CIVE 573	Advanced Traffic Engineering	3
CIVE 574	Geometric Design of Highways	3
CIVE 575	Transportation System Management	3
CIVE 576	Public Transportation Systems	3
CIVE 577	Special Topics In Transportation Engineering	3
CIVE 581	Construction Engineering, Equipment, and Methods	3
CIVE 582	Advanced Project Management	3
CIVE 587	Operation Management	3

3. Construction Engineering and Management Track

Course #	Course Name	Credits
CIVE 511	Evaluation And Testing Of Concrete Structures	3
CIVE 514	Advanced Structural Analysis	3
CIVE 515	Earthquake Engineering	3
CIVE 580	Engineering Quality Management	3
CIVE 581	Construction Engineering, Equipment, and Methods	3
CIVE 582	Advanced Project Management	3
CIVE 583	Construction Liability and Contracts	3
CIVE 584	Construction Cost Estimating and Bidding	3
CIVE 585	Techniques of Project Planning and Control	3
CIVE 586	Construction Cost Engineering	3
CIVE 587	Operation Management	3
CIVE 588	Construction of Building	3
CIVE 589	Special Topics in Construction Engineering	3

Course Description

A) Core Courses

MATH 505 Advanced Engineering Mathematics (3 Credits)

Prerequisite: Graduate Standing

Series solutions of ordinary differential equations; Special functions; Laplace transform; Fourier transform; Fourier series; Partial differential equations; and Complex analysis.

MATH 506 Advanced Engineering Statistics (3 Credits)

Prerequisite: Graduate Standing

Random sampling and data description, Tests of hypotheses, Simple and multiple linear regression and correlation, and Design of experiments with single and several factors.

CIVE 507 Computer Applications in Civil Engineering (3 Credits)

Prerequisite: Graduate Standing

Review of essential math, One dimensional finite element theory, Two and three dimensional finite element theory, Finite element process, Computer modeling, and application in case studies.

CIVE 598 Engineering Design Project (Non-Thesis Program Only) (3 Credits)

Prerequisite: Consent of the Advisor

Application of knowledge and skills acquired during the study of the graduate program in the solution of open-ended, advanced-level design problems from a technical, environmental and socio-economic viewpoint. Students can work with senior engineers from industry on a specific design project.

CIVE 599 Seminar (3 Credit)

Prerequisite: Graduate Standing

Graduate students working towards the M.S. degree are required to attend the seminars given by faculty, visiting scholars, and fellow graduate students. Additionally, each student must present at least one seminar on a timely research topic. Among other things, this course is designed to give the student an overview of research in the department, and a familiarity with the research methodology, journals and professional societies in his discipline.

CIVE 600-A Research Thesis (Thesis-Option only) (3 Credits)

CIVE 600-B Research Thesis (Thesis-Option only) (3 Credits)

CIVE 600-C Research Thesis (Thesis-Option only) (3 Credits)

CIVE 600-D Research Thesis (Thesis-Option only) (3 Credits)

CIVE 600-E Research Thesis (Thesis-Option only) (0 Credits)

Prerequisite: CIVE 599

The student has to undertake and complete a research topic under the supervision of a graduate faculty member in order to probe in-depth a specific problem in the research area.

B) Elective Courses

1. Structural Engineering Track:

CIVE 510 Advanced Reinforced Concrete (3 Credits)

Moment-curvature for RC members, design and behavior of continuous flexural members, two-way floor systems, design of slender columns, beam-column joints; deflection of RC members; design for shear and torsion; foundation design; computer modeling for analysis and design of RC structures, designs of shear walls.

CIVE 511 Evaluations and Testing of Concrete Structures (3 Credits)

Prerequisite: CIVE 510

Introduction to in-situ testing and planning of test programs; various nondestructive tests (NDT), tests for concrete strength, quality, composition and durability; measurement of corrosion activity; chemical tests for cement, chloride and sulphate contents; cracking of concrete; in-situ load tests; condition assessment with case studies; types of concrete repair; repair strategy, compatibility and selection of repair materials, patch repair, corrosion repair and crack repair.

CIVE 512 Concrete Materials (3 Credits)

Properties of concrete constituents; types of cements and their composition; cement hydration; microstructure of hydrated cement paste and its influence on strength, shrinkage and creep; chemical admixtures; alternate cement matrices; concrete durability and sustainability; introduction to repair materials.

CIVE 513 Advanced Structural Mechanics (3 Credits)

Unsymmetrical bending of beams; shear center; bending of curved beams; torsion of prismatic bars; beams on elastic foundations; introduction to Cartesian tensors; tensorial transformation of stress; Mohr's circle for 3-D stress transformation; dyadic symbols; finite and infinitesimal strain tensors; Mohr's circle for 3-D strain; constitutive equations for anisotropic materials and application to composite laminates; theories of yield and fracture.

CIVE 514 Advanced Structural Analysis (3 Credits)

Matrix algebra, solution of equations, review of energy principles, virtual work; degree of redundancy, choice of redundants, flexibility method, kinematic indeterminacy, development of element stiffness matrices, stiffness method of analysis of structures, computer applications and software development, axial force effects and eigenvalue analysis, introduction to the finite element method.

CIVE 515 Earthquake Engineering (3 Credits)

This course is to serve as an introduction to the multi-disciplinary field of earthquake engineering. Topics covered in the course include tectonics, ground motion characterization, probabilistic hazard analysis, response spectra, inelastic structural analysis, and performance-based earthquake-resistant design.

CIVE 516 Behaviors and Design of Steel Structures (3 Credits)

Elastic-plastic concepts of structural behavior; plastic design of beams and frames; design of plate girders, compression members with large width-thickness ratio and stiffened plate; composite design and behavior, behavior of rigid and semirigid connections; design considerations for fracture and fatigue; design of rigid frames; behavior of multistory frames and second-order analysis.

CIVE 517 Finite Element Methods (3 Credits)

Prerequisites: CIVE 513, CIVE 514, or Consent of the Instructor

Basic equations of elasticity; virtual work; stiffness properties of structural elements; variational and weighted residual methods, applications to trusses, beams, plane frames, two-dimensional, axi-symmetric and three-dimensional solids; higher order and is oparametric elements; field and time-dependent problems of fluid and heat flow; software development.

CIVE 518 Prestressed Concrete (3 Credits)

Prestressing systems; materials; behavior of prestressed concrete beams; criteria for analysis and design; losses; analysis of stresses; flexural design; shear; end blocks; deflection; composite members; continuous beams; partial prestressing, design applications; introduction to segmental construction.

CIVE 519 Special Topics in Structural Engineering (3 Credits)
Advanced topics selected from the broad area of structural and material engineering to provide the student with knowledge of recent applications and development in this specialty.

2. Transportation Engineering Track:

CIVE 511 Evaluations and Testing of Concrete Structures (3 Credits)
Prerequisite: CIVE 510
Introduction to in-situ testing and planning of test programs; various nondestructive tests (NDT), tests for concrete strength, quality, composition and durability; measurement of corrosion activity; chemical tests for cement, chloride and sulphate contents; cracking of concrete; in-situ load tests; condition assessment with case studies; types of concrete repair; repair strategy, compatibility and selection of repair materials, patch repair, corrosion repair and crack repair.

CIVE 514 Advanced Structural Analysis (3 Credits)
Matrix algebra, solution of equations, review of energy principles, virtual work; degree of redundancy, choice of redundants, flexibility method, kinematic indeterminacy, development of element stiffness matrices, stiffness method of analysis of structures, computer applications and software development, axial force effects and eigenvalue analysis, introduction to the finite element method.

CIVE 515 Earthquake Engineering (3 Credits)
This course is to serve as an introduction to the multi-disciplinary field of earthquake engineering. Topics covered in the course include tectonics, ground motion characterization, probabilistic hazard analysis, response spectra, inelastic structural analysis, and performance-based earthquake-resistant design.

CIVE 570 Advanced Transportation Engineering (3 Credits)
Principles of traffic flow elements, capacity analysis of highways and intersections; design and analysis of signalization including warrants, timing, phasing and coordination; intelligent transportation systems.

CIVE 571 Pavement Structures and Design (3 Credits)
Fundamentals of pavement-vehicle interaction and the mechanics of pavement response; stress analysis in flexible and rigid pavements; material characterization; design of flexible and rigid pavements for highways and airports; surface, base and subgrade courses evaluation and design; modern design techniques and their applications.

CIVE 572 Urban Transportation Planning (3 Credits)
Prerequisite: Math 505
Transportation planning processes, transportation land use interaction, travel evaluation and demand estimation, traffic generation theories and assignment models, and transit analysis.

CIVE 573 Advanced Traffic Engineering (3 Credits)
Prerequisite: Consent of the Instructor
Macroscopic and microscopic characteristics of flow, speed and density; statistical distribution of traffic characteristics; shock wave analysis; queuing theory; application of theory of traffic flow to design and control of traffic; fundamentals and applications of existing tools and software.

CIVE 574 Geometric Design of Highways (3 Credits)
Prerequisite: Consent of the Instructor
Geometric configuration and design of streets and freeways, design of intersections and interchanges, parking facilities design, roadside and guardrail design; and safety issues.

CIVE 575 Transportation System Management (3 Credits)
Application of systems approach to transportation; the determination of transportation demand and supply; the equilibrium process; transportation system evaluation; cost effectiveness techniques; use of optimization techniques in transportation.

CIVE 576 Public Transportation Systems (3 Credits)
Mass transit operation and management, development in urban public transportation modes; systems and services, transit characteristics and vehicle technology, demand forecasting, routing and scheduling problems, and land-use impact.

CIVE 577 Special Topics in Transportation Engineering (3 Credits)
Advanced topics selected from the broad areas of transportation engineering to provide the knowledge with the recent applications and development.

3. Construction Engineering and Management Track:

CIVE 580 Engineering Quality Management (3 Credits)
concepts of total quality management in the engineering context including: philosophies and frameworks of quality management, quality assurance and quality control incorporating quality into strategic planning and execution of large engineering projects and processes, leadership, process measurement and management, continuous quality improvement, standardization, and total quality management.

CIVE 581 Construction Engineering, Equipment, and Methods (3 Credits)
Major construction equipment and concrete construction. Selection of scrapers, dozers, cranes, etc. based on applications, methods, and production requirements. Power generation, transmission, and output capacity of equipment engines. Calculation of transport cycle times and equipment productivity. Construction methods of earthworks; grouting; and earth reinforcing; dredging and dewatering; concrete mixing, delivery, and placement. Design of forms for concrete walls and supported slabs. Equipment cost and procurement decisions. Equipment economic life; productivity estimation; and cost of production.

CIVE 582 Advanced Project Management (3 Credits)
Prerequisite: Consent of the Instructor
Skills generally required for sound project management in a variety of management settings are studied in addition to specific management issues typically associated with engineering and construction companies. Students are introduced to the Project Management Institute's Body of Knowledge (PMBOK). A discussion of project organizational structures and the evolving use of project management processes helps establish an appreciation for the role of a Project Manager. The elements of a project and the role and responsibilities of the Project Manager are studied in depth. Students are also acquainted with risk management concepts, labor, safety, procurement. The course will also cover construction operation planning, job site layout, supervision, measurement, analysis, and improvement. Dimensions of performance: safety, quality, quality of work life, productivity, and innovation.

CIVE 583 Construction Liability and Contracts (3 Credits)
Prerequisite: COEN 300
This course provides an overview of the fundamental aspects of the laws that affect construction and engineering companies as well as the project owners. The FIDIC conditions of EPC, BOT, and PPP contracts with Particular emphasis is placed on contract forms and provisions related to liability for engineering design and construction companies, bonds and sureties, the roles and responsibilities of the typical participation in the process, variation orders, claims and dispute resolution. Students will learn the importance of contract language negotiations.

CIVE 584 Construction Cost Estimating and Bidding (3 Credits)
Prerequisite: CIVE 581
A broad study of estimating methodologies ranging from order of magnitude to detailed estimates are presented focusing on labor, equipment, materials, subcontractors, job conditions, location, project overhead, general and administrative cost, and profit. The course will also cover cost indices, parametric estimates, unit price proposals, and measuring work in addition to life-cycle costing and value engineering. Students will learn about the importance of constructing a detailed

Work Breakdown Structure in the estimating process. Substantial course focus will be placed on the term group project which consists of the development of a bid estimate for a small construction project.

CIVE 585 Techniques of Project Planning and Control (3 Credits)

Prerequisites: CIVE 582 or CIVE 583

This course provides a thorough understanding of the project scheduling process in construction planning and control. Students learn the relationship between the work breakdown structure, organization breakdown structure and the activities used in developing project schedules. The Critical Path Method, the Program Evaluation and Review Technique, overlapping networks, and the Line of Balance scheduling methods are discussed. The use of scheduling techniques for project control, resources leveling and resources constraint management, cash flow management, time-cost relationships and schedule crashing at minimum cost are investigated as is the importance of communications in the planning and monitoring/controlling processes. The use of project schedule to assess the time and cost impacts of delays and variations orders and claims are examined. Students will experience hands on use with project scheduling software.

CIVE 586 Construction Cost Engineering (3 Credits)

Prerequisite: CIVE 584

Cost engineering for construction organizations, projects, and operations. Construction financing; break-even, profit, and cash flow analyses; capital budgeting. Construction financial accounting, cost accounting, and cost control systems including earned value analysis. This course also provides an extensive overview of financial and managerial accounting concepts for non-financial managers and the elements of accounting (Generally Accepted Accounting Practices), financial records and financial statements are established. Fundamental financial calculations associated with the time value of money, decision making problems and relevant techniques, benefit/cost analysis, methods of economic appraisal, and consideration of inflation and taxation in investment decisions. Students are expected to demonstrate proficiency in the use of Excel functions in solving financial problems.

CIVE 587 Operations Management (3 Credits)

Prerequisite: CIVE 584 or CIVE 585

This introductory level course provides students with an understanding of the latest quantitative tools for management decision-making. Topics include quality-control applications, optimization techniques including break-even analysis, linear and integer programming, the Simplex method, multicriteria decisions, the transportation model, and the allocation and assignment model. Other topics include time-series analysis, queuing theory, simulation, and decision trees analysis. Computer applications, case analysis and problem-solving sets are used throughout the course.

CIVE 588 Construction of Buildings (3 Credits)

Prerequisite: CIVE 580, CIVE 582

Material selection, construction details, manufacture, fabrication, and erection of building structures using steel, light wood, timber, cast-in-place concrete, precast concrete, and masonry; and of building materials for roof, floor, and wall surfaces. Life Cycle Cost Analysis Methods and Applications in Buildings; Building Energy Modeling and Simulation; Energy Management in Buildings; Impact of Building Occupants and Behavioral Challenges; Renewable Energy and Efficiency in Buildings; Existing Buildings and Technical/Social Challenges of Energy Retrofits; and Building Certifications. Field trips to fabrication plants and construction sites.

CIVE 589 Special Topics in Construction Engineering (3 Credits)

Prerequisite: Consent of the Instructor

Any selected topic in state-of-the-art in construction engineering and management. Selected topics might include: agile management, process reengineering, and management of specific projects (technology, construction, industrial).

MASTER OF ELECTRICAL ENGINEERING

Program Overview and Objectives:

Engineering, in general, is the application of scientific and mathematical principles to analyze and design systems. So in the core of engineers work is manufacturing, processes and systems. Electrical engineering has contributed drastically and strikingly to the construction of the modern world. Electrical engineers have been responsible for the creation for all kinds of means of communications; from classical communications: planes, trains and ships to the cyber communications resembled in the digital revolution manifested in the Internet and mobile communications. He is also behind the creation of electric power, modern electronics, computers, electronic systems, modern flight controllers, automated manufacturing and medical diagnostic tools.

Working in the field of electrical engineering is itself a challenge to share the world with the booming industry and build the future of technology in the world. For this purpose, the Master's program in Electrical Engineering at the FBSU aims to provide the students with a solid theoretical and practical background and methods of scientific research to qualify the graduates to contribute effectively in human attempts to enter the twenty-first century in the areas of energy and digital communication Moreover, the program is designed to match the programs in world class International universities, which qualifies the student to pursue his/her study in the most prestigious institutions worldwide. Moreover, the program seeks enhancing and deepening Electrical engineers' qualification, critical thinking, innovation and lifelong learning in various areas of Electrical Engineering.

To maintain a high quality program the university make sure that the Department has faculty, labs and nice environment

English is the a language that is most spread and most of the journals articles are printed in it, hence the admission criteria and program is designed and executed in a way that students graduated and can fluently express themselves in English language in writing and verbally.

The Master of Science in Electrical Engineering program at FBSU embraces three different areas of specialization Tracks, namely:

- Master of Electrical engineering / Energy and Power Systems (Thesis option and Non-thesis option)
- Master of Electrical engineering /Communication and Network Systems (Thesis option and Non-thesis option)
- Master of Electrical engineering / Renewable Energy Systems (Thesis option and Non-thesis option)

The program offers research opportunities and advanced courses in a broad range of the aforementioned areas. The student may transfer from one track to another, or from one option to another (thesis or non-thesis) after the first semester of the study.

The student shall lodge an application so that the thesis supervisor can be assigned and then a 3 credit-hour research proposal shall also be submitted during the first semester. The student shall not register the thesis in the next semester unless the research proposal is already approved by the supervisor, the academic department, and the College of Graduate and Scientific Research.

Admission Requirements:

FBSU invites students with a sound academic record, good personal character, strong interest to serve their communities and eagerness to serve as professionals in allied fields.

Applicants must satisfy the following eligibility requirements:

1. Hold a Bachelor degree in Electrical Engineering or related streams from an academic institution accredited/ recognized by the KSA's Ministry of Education (MOE). The field including, but not limited to software engineering, information systems, business information systems, electrical engineering, and electronics.
2. Hold a Bachelor's degree in civil engineering, or a very related field (may be accepted with some conditions) from an academic institution accredited/recognized by the KSA's Ministry of Education (MOE). The field including, but not limited to software engineering, information systems, business information systems, electrical engineering, and electronics with a minimum ranking/rating of "Good": 2.75/5 or 1.75/4. However, applicants with a rating of "Poor": can be accepted if approved by the Council of Graduate Studies if the applicants show minimum of three years experiences in his feild.
3. At least three letters of recommendation from the faculty who taught the applicant undergraduate courses. [Sealed and signed]
4. Pass a personal interview with the department academic committee.

Program Structure

The program is composed of two options; thesis option and non-thesis option. Thesis option has 39 credit hours, distributed over 4 semesters; 27 credits in the form of courses, and 12 credits for the thesis. The Non-Thesis option is composed of 42 credit hours, also distributed over 4 semesters.

A) Core Courses (For all majors)

1. General Elective Courses

Non-Thesis Track:

Course Code	Course Title	Credits
ELEE 500	Probability and Stochastic Processes	3
ELEE 501	Linear System Analysis	3
ELEE 503	Advanced Control Systems	3
ELEE 599	Research Methodology	3
ELEE 611	Engineering Design Project	3
	Total	**15**

Thesis Track:

Course Code	Course Title	Credits
ELEE 500	Probability and Stochastic Processes	3
ELEE 501	Linear System Analysis	3
ELEE 503	Advanced Control Systems	3
ELEE 599	Research Methodology	3
ELEE 610	Research Thesis	12
	Total	**24**

B) Elective Courses

1. General Elective Courses:

Students should take at least 6 CH from the below General Elective Courses list.

Course Code	Course Title	Credits
ELEE 502	Optimization Techniques for Electrical Engineering	3
ELEE 507	Digital Communications	3
ELEE 514	Environmental Impacts of Energy Systems	3
ELEE 519	Smart Grids	3
ELEE 525	Digital Control Systems	3
ELEE 550	Wireless Power Transfer	3
ELEE 551	Electromagnetic Compatibility	

2. Electives for Energy and Power Systems

Students desire to have Energy and Power System specialty should register a minimum of 9 CH for thesis option and 12 CH for non-thesis option from the following list:

Course Code	Course Title	Credits
ELEE 504	Advanced Power System Analysis	3
ELEE 506	Advanced Analysis of Electric Machines	3
ELEE 512	Power System Planning	3
ELEE 513	Renewable Energy Systems	3
ELEE 515	Energy Policy and Planning	3
ELEE 516	Power Electronics Systems and Applications	3
ELEE 517	Electric Power Systems Control and Stability	3
ELEE 518	Energy Efficiency in the Power Sector	3
ELEE 520	Protection of Power Systems	3
ELEE 521	Electric Safety and Grounding System Design	3
ELEE 522	Special Topics in Energy and Power Systems	3
ELEE 544	Power Systems Operations	3
ELEE 545	Advanced Power Distribution Systems	3
ELEE 546	Power System Reliability	3

3. Electives for Communications and Network Systems

Students desire to have Communications and Network System specialty should register a minimum of 9 CH for thesis option and 12 CH for non-thesis option from the following list:

Course Code	Course Title	Credits
ELEE 508	Advanced Digital and Data Communications	3
ELEE 511	Modeling and Simulation of Communication Systems	3
ELEE 531	Information Theory	3
ELEE 532	Queuing Theory	3
ELEE 533	Stochastic Processes, Detection, and Estimation	3
ELEE 534	Multimedia and Advanced Signal Processing	3
ELEE 535	Computer Network Architectures and Protocols	3
ELEE 536	Wireless Networks	3
ELEE 537	Mobile Communications Networks	3
ELEE 538	Optical Fiber Communication	3
ELEE 540	Introduction to Optical Electronics	3
ELEE 541	Special Topics in Communication and Network Systems	3
ELEE 553	Antennas for Wireless Communications	3
ELEE 555	RF System Engineering for Wireless Communications	3

4. Electives for Renewable Energy Systems

Students desire to have renewable energy systems specialty should register a minimum of 9 CH for thesis option and 12 CH for non-thesis option from the following list:

Course Code	Course Title	Credits
ELEE 512	Power System Planning	3
ELEE 513	Renewable Energy Systems	3
ELEE 515	Energy Policy	3
ELEE 518	Energy Efficiency in the Power Sector	3
ELEE 544	Power Systems Operations	3
ELEE 546	Power System Reliability	3
ELEE 572	Solar Photovoltaic Systems	3
ELEE 573	Wind Energy Systems	3
ELEE 574	Energy Conversion and Storage	3
ELEE 575	Green Buildings	3
ELEE 576	Hydrogen Energy Systems	3
ELEE 577	Special Topics in Renewable Energy Systems	3

Study Plan

A) Non-Thesis Option (42 credit hours)

Semester 1	Semester 2
Core Course - 3 hours	Specialization Elective - 3 hours
Core Course - 3 hours	Specialization Elective - 3 hours
Core Course - 3 hours	General Elective - 3 hours
	ELEE 599 (Research Methodoly) - 3 hours
Total: 9 Credit Hours	**Total: 12 Credit Hours**
THE TOTAL CREDIT HOURS ARE 21 CREDITS DURING THE FIRST ACADEMIC YEAR.	

Semester 3	Semester 4
Specialization Elective - 3 hours	General Elective - 3 hours
Specialization Elective - 3 hours	General/Specialization Elective - 3 hours
General/Specialization Elective - 3 hours	ELEE 611 (Engineering Design Project) - 3 hours
General/Specialization Elective - 3 hours	
Total: 12 Credit Hours	**Total: 9 Credit Hours**
The total credit hours are 21 credits during the second academic year.	

B) Thesis Option[7] (39 credit hours)

Semester 1	Semester 2
Core Course - 3 hours	Specialization Elective - 3 hours
Core Course - 3 hours	Specialization Elective - 3 hours
Core Course - 3 hours	General Elective - 3 hours
	ELEE 599 (Research Methodoly) - 3 hours
Total: 9 Credit Hours	**Total: 12 Credit Hours**
The total credit hours are 21 credits during the first academic year.	

Semester 1	Semester 2
Specialization Elective - 3 hours	General Elective - 3 hours
Master thesis - 3 hours	Master thesis - 3 hours
Master thesis - 3 hours	Master thesis - 3 hours
Total: 9 Credit Hours	**Total: 9 Credit Hours**
The total credit hours are 18 credits during the first academic year.	

[7] The student shall submit a thesis proposal to the department Chair within 8 weeks of the second semester in order to be approved and accepted by the end of the semester.

Course Description

ELEE 500 Probability and Stochastic Processes (3 Credits)

Prerequisite: STAT 230, ELEE 350

This course is intended as a first semester graduate course on probability and stochastic processes with application to signal processing, communications, estimation and control. The objective is to present a comprehensive coverage of the basic tools needed by an electrical engineering graduate student specializing in the above areas.

ELEE 501 Linear System Analysis (3 Credits)

Prerequisite: ELEE 380, MATH 215

Fundamental concepts in linear system theory: matrix algebra, linear vector space, linear operator; linearity, causality, relaxedness, and time invariance. Input-output and state space models. Solutions of linear dynamic equations and impulse responses. Characteristics of linear systems: controllability, observability and stability.

ELEE 502 Optimization Techniques for Electrical Engineering (3 Credits)

Prerequisite: MATH 215

Optimization theory and algorithms and their application to electrical engineering. Sparse optimization methods, Eigen-decomposition techniques, the expectation maximization algorithms, stochastic optimization techniques, and special techniques relevant to large-scale optimization.

ELEE 503 Advanced Control Systems (3 Credits)

Prerequisite: ELEE 380, ELEE 399L

This is a first graduate level course on control systems with an emphasis on controller design. The course will deal mainly with linear systems (or linearized systems), some nonlinear control concepts will be introduced. In class and homework examples will be taken from various application domains and research projects, and MATLAB will be used for analysis, design and simulations of these systems.

ELEE 504 Advanced Power System Analysis (3 Credits)

Prerequisite: ELEE 461

A course on optimal dispatch of generation, symmetrical components and unbalanced faults, transient stability, control of generation, state estimation in power systems, and power system simulation.

ELEE 506 Advanced Analysis of Electric Machines (3 Credits)

Prerequisite: ELEE 360, ELEE 463

Generalized theory of electrical machines, transient analysis in transformers: short circuit forces, inrush currents, transients and dynamics of DC and AC machines (synchronous and induction), special machines: brushless AC motors, switched reluctance motors, linear motors, stepper motors, computer implementation and analysis of electrical machines.

ELEE 507 Digital Communications (3 Credits)

Prerequisite: ELEE 470

Elements of communication theory and information theory applied to digital communications systems. Characterization of noise and channel models. Characterization of communication signals and systems, representation of digitally modulated signals and spectral characteristics. Optimum receivers for AWGN channels: evaluation of error rate performance and channel bandwidth requirements. Broadcast and Multiple access channels. FDMA, TDMA, and CDMA.

ELEE 508 Advanced Digital and Data Communications (3 Credits)

Prerequisite: ELEE 507

Digital signaling over channels with intersymbol interference and AWGN. Wireless multipath channel models: time and frequency dispersive channels, level crossing and average fade duration. Diversity concepts: modeling and error probability performance evaluation. Spread spectrum in digital transmission over multipath fading channels, performance analysis and fading mitigation techniques.

ELEE 511 Modeling and Simulation of Communication Systems (3 Credits)

Prerequisite: ELEE 470, ELEE 500

The course covers the principles and methods for simulation of computer networks and data communication systems. Topics include: Simulation and modeling basics (traffic modeling, link-, system-, packet level simulation, SW/HW in the loop), probability theory fundamentals, random number generation, mobility models, channel models, topology models, graph theory and algorithms, queuing models, queuing networks, network calculus, discrete event-based simulation, Monte-Carlo simulation, rate-based simulation, analysis of simulation results, statistical analysis, visualization of results, simulation languages and tools, simulation packages.

ELEE 512 Power System Planning (3 Credits)

Prerequisite: Advisor Consent

Mathematical methods and modern approaches to power system planning. Demand forecasting. Generation system planning: deterministic and probabilistic methods. Transmission system planning: heuristic and stochastic methods. Optimization methods for transmission planning. Route selection: environmental and other considerations. Distribution system planning: system layout, and choice of components. Power system expansion planning and management. Micro-grids scheduling. Progress of renewable energy in terms of application, construction and operation. Grid-connected and stand-alone renewable energy sources planning, recent-integration requirements, and compatibility with grid codes.

ELEE 513 Renewable Energy Systems (3 Credits)

Prerequisite: Advisor Consent

This course seeks to impart in students a sound understanding of renewable energy systems. The course includes: wind energy, solar energy, biomass energy, hydro power and geothermal energy systems.

ELEE 514 Environmental Impacts of Energy Systems (3 Credits)

Prerequisite: Graduate standing

World energy resources and classifications. Sources and effects of air pollution. Air quality modeling, Gaussian dispersion models. Motor vehicles emissions and noise pollution, mitigation strategies. Environmental impacts of electricity generation, pollution control systems, electromagnetic radiations. Sustainability and environmental impact of different energy technologies, including conventional energy sources as well as renewable and/or clean energy sources. The technological challenges, potential for future development, and environmental impacts (community, regional, and global). The role of renewable energy in the global combat of climate change. Environmental impact assessment.

ELEE 515 Energy Policy (3 Credits)

Prerequisite: Graduate standing

A course that focuses on features of modern energy policy. Topics covered include the interaction among the technological, economic, environmental, and sociopolitical aspects of energy supply and use; electricity, oil, and gas industries, and their market structures. Demand-side energy policy. Energy policy selection and analysis, including regulation, taxation, tariffs, feed-in traffic, targets, incentives and market-based. Energy transition. Technical and policy challenges of incorporating renewables. Integration of renewable energy into electricity markets: Standards and requirements. Impact of renewables policy on climate change.

ELEE 516 Power Electronics Systems and Applications (3 Credits)

Prerequisite: ELEE 461, ELEE 462

A course that reviews converter topologies for AC/DC, DC/AC, and DC/DC; power supply applications; converter applications to motor drives; utility interface of distributed energy systems; static VAR systems; flexible AC transmission; high voltage DC; power quality control; active and passive harmonics compensation. In addition, this course covers the design and applications of power electronic devices for off-grid and grid connected renewable energy systems.

ELEE 517 Electric Power Systems Control and Stability (3 Credits)

Prerequisite: Graduate standing

A course on short-term load forecasting, generation unit commitment, economic load dispatch, loss formula coefficients, nonlinear programming, optimal power flow, security assessment, security dispatch, spinning reserve evaluation, automatic generation control, reactive power and voltage control, and state estimation.

ELEE 518 Energy Efficiency in the Power Sector (3 Credits)

Prerequisite: Advisor Consent

Topics covered in the course include: utility companies and energy supply; energy sustainability; energy use and associated GHG emissions; cogeneration systems: CHP and CCGT; reciprocating engines; distributed generation; demand side management; energy audit: types and data analysis, monitoring and targeting of energy, energy- efficient rotating machines, design and performance optimization. Methods to reduce energy consumption, such as energy labelling scheme, energy management and audit. Building management systems. The impacts of renewable energies on the power system efficiency. Case studies.

ELEE 519 Smart Grids (3 Credits)

Prerequisite: ELEE 461

The concept of Smart-grid, with network, components, technologies and trends. Significance to participants throughout the value chain, opportunities, threats, business models and regulatory issues. Integration of distributed variable generation, planning, management, operation, voltage stability and protection Advanced metering systems and intelligent buildings with demand side management and energy efficiency.

ELEE 520 Protection of Power Systems (3 Credits)

Prerequisite: ELEE 469

A course on the elements of protection in power systems mainly targeting design and implementation of protective relays: operating characteristics; power and current directional relays; differential relays; distance and wire pilot relays; protection of generators, busbar, capacitors and reactors; reclosers; under frequency relays; heating and harmonic effects; and Computer-based protective device coordination; instrument transformer (effect of dc component, estimation of CT performance), coupling capacitor voltage transformer.

ELEE 521 Electric Safety and Grounding System Design (3 Credits)

Prerequisite: ELEE 469

This course discusses grounding of power systems and equipment; the impact of grounding on system performance, system equipment integrity, safety of personnel as well as safety of the public at large. The course addresses the problem of grounding mainly in distribution systems: the effects on reliability of supply to customers, survivability of end-use equipment, and safety of individuals.

ELEE 522 Special Topics in Energy and Power Systems (3 Credits)

Prerequisite: Graduate Standing, Advisor Consent

Advanced topics selected from the broad area of energy and power systems to provide the student with knowledge of recent advances and contemporary development in this area.

ELEE 525 Digital Control Systems (3 Credits)

Prerequisite: ELEE 501, ELEE 503

The course covers the design of practical control systems intended for implementation using digital controllers and embedded systems. In particular, the course covers: digital control systems, discrete systems, stability analysis, digital controller synthesis, digital PID controllers, design of digital controllers, state-space models, observability and controllability, pole placement design, optimal design methods, nonlinear discrete-time systems, digital control of power systems, case studies.

ELEE 531 Information Theory (3 Credits)

Prerequisite: Advisor Consent

This course introduces the field of information theory and its applications to communications theory, computer science, statistics, and probability theory. Covering all the essential topics in information theory, we introduce the basic quantities of entropy, relative entropy, and mutual information, and show how they arise as natural answers to questions of data compression, channel capacity, rate distortion, and hypothesis testing.

ELEE 532 Queuing Theory (3 Credits)

Prerequisite: ELEE 500

A course that covers Poisson counting and renewal processes; Markov chains and decision theory, branching processes, birth death processes, and semi-Markov processes; simple Markovian queues, networks of queues, general single and multiple server queues, bounds and approximations.

ELEE 533 Stochastic Processes, Detection, and Estimation (3 Credits)

Prerequisite: ELEE 500

This is a graduate-level introduction to the fundamentals of detection and estimation theory involving signal and system models in which there is some inherent randomness. The concepts that we'll develop are extraordinarily rich, interesting, and powerful, and form the basis for an enormous range of algorithms used in diverse applications. The material in this course constitutes a common foundation for work in the statistical signal processing, communication, and control areas.

ELEE 534 Multimedia and Advanced Signal Processing (3 Credits)

Prerequisite: ELEE 451

The course provides an overview of the current multimedia standards and technologies and a brief description of future technologies. It also addresses the fundamental principles and techniques in multimedia signal processing: text, graphics, speech, audio, image, video; standards for multimedia coding, processing and compression.

ELEE 535 Computer Network Architectures and Protocols (3 Credits)

Prerequisite: ELEE 431

This course introduces the concepts and techniques used to model and implement communications between processes residing on independent hosts. The course examines the conceptual framework for specifying a computer network - the network architecture, and investigates the set of relevant protocols. The OSIRM is presented, and the service definitions and protocol specifications for implementing each of the seven layers of the Reference Model are analyzed in detail.

ELEE 536 Wireless Networks (3 Credits)

Prerequisite: ELEE 508

The objective of this course is to give an introduction to the fundamentals of the wireless communications systems, the wireless network architectures, protocols, and applications. Topics of study include an overview of wireless communications and mobile computing systems, signal propagation characteristics of wireless channels, wireless channel modeling, frequency reuse/cellular/microcellular concepts, spread spectrum modulation for wireless systems, multiple

access techniques, and wireless networking standards (e.g., 2.5G, 3G, IEEE 802.11, IEEE 802.15, IEEE 802.16/WiMAX, LTE).

ELEE 537 Mobile Communications Networks (3 Credits)

Prerequisite: ELEE 536

Cellular networks, ad hoc networks; access protocols; radio and network resource management; quality of service; mobility and location management; routing; mobile-IP; current wireless technologies for personal, local and satellite networks.

ELEE 538 Optical Fiber Communication (3 Credits)

Prerequisite: Advisor Consent

Dielectric slab waveguides. Classification of mode types. Parabolic two-dimensional media. Circular waveguides. Step-index and graded-index optical fibers. Effect of loss. Dispersion effects. Fabrication methods in integrated optics and optical fibers. Light sources. Light Detectors. WDM concepts and 19 components. Optical Amplifiers. Point-to-point link system considerations. Photonic devices. Applications in communication systems.

ELEE 540 Introduction to Optical Electronics (3 Credits)

Prerequisites: Advisor Consent

Principles, devices and materials used to generate, modulate, and detect optical radiation. Review of important properties of light and semiconductors. Light-emitting diodes and lasers. Electro-optic modulation. Thermal and quantum detection. Emphasis on semiconductor-based devices and application to fiber-optical communications.

ELEE 541 Special Topics in Communication and Network Systems (3 Credits)

Prerequisite: Graduate Standing, Advisor Consent

Advanced topics selected from the broad area of communication and network systems to provide the student with knowledge of recent advances and contemporary development in this area.

ELEE 544 Power System Operation (3 Credits)

Prerequisite: ELEE 461

An advanced course that mainly introduces the basic concepts related to power system operation. It depends strongly on power system analysis. This course will introduce the Electric power generation, transmission and distribution. Unit commitment and economic operation principles; optimal economic dispatch; generation scheduling formulation and solution techniques; optimal power flow solution techniques and applications; state estimation, substation design, load and energy forecasting. Operation of electric grid under high penetration of intermittent renewable resources.

ELEE 545 Advanced Power Distribution Systems (3 Credits)

Prerequisite: ELEE 461

Electric power distribution system planning, design and operations; load characteristics and distribution transformers; design of subtranmission lines and distribution substations; primary and secondary feeder design considerations; distribution system voltage regulation, protection and reliability; distributed generation and smart grid application.

ELEE 546 Power System Reliability (3 Credits)

Prerequisite: STAT 230, ELEE 461

An advanced course that mainly introduces the basic techniques used in power systems reliability calculations. It depends strongly on Statistics and Probability theory. This course will introduce the Quantitative Reliability, Probability Theory, Stochastic Processes, Frequency Balance, Power System Reliability, Generation System Reliability, Multi-area Power System Reliability, Composite power system.

ELEE 550 Wireless Power Transfer (3 Credits)

Prerequisite: Advisor Consent

This course provides a comprehensive overview of the emerging field of wireless power transfer (WPT). It presents a multidisciplinary treatment of WPT theory, technology, and applications. Case studies in cutting-edge fields are explored to illuminate the basic concepts and inspire thoughts in future applications.

ELEE 551 Electromagnetic Compatibility (3 Credits)

Prerequisite: ELEE 390

Introduction to Electromagnetic Compatibility (EMC), EMC requirements of electronic systems, signal spectra, non-ideal behavior of components, conducted emissions and susceptibility, radiated emissions and susceptibility, crosstalk, shielding, and system design for EMC.

ELEE 553 Antennas for Wireless Communications (3 Credits)

Prerequisite: ELEE 390

The principles of analysis and design of antenna arrays are discussed. Special attention is paid to antennas popular in mobile (cellular, satellite) telecommunications: Fundamental parameters; radiation integrals; wireless systems; wire, loop, and microstrip antennas; antenna arrays; smart antennas; ground effects; multipath.

ELEE 555 RF System Engineering for Wireless Communications (3 Credits)

Prerequisite: ELEE 470

This course introduces students to system blocks, system parameters, and architectures of RF systems for wireless communications. It focuses on the design of a radio system for transmission and reception of voice and data information: receivers and transmitters system topologies, key system blocks in a wireless system, determination of system block parameters from radio requirements and system analysis, tradeoffs between various blocks in a radio system, and frequency planning. It discusses how modulation and demodulation schemes and multiple-access techniques used in present wireless applications influence RF systems requirements. The last part of the course focuses the link budget analysis of RF radio links.

ELEE 572 Solar Photovoltaic Systems (3 Credits)

Prerequisite: ELEE 468, Advisor Consent

This course explores the solar cell types, solar photovoltaic (PV) technologies, design, and installation of solar PV systems and their applications both off-grid and on-grid. Both centralized solar power plants and distributed topologies will be considered. Techno-economics of power generation through solar PV technology. It also covers the economic analysis of a PV project and its environmental benefits. Case studies.

ELEE 573 Wind Energy Systems (3 Credits)

Prerequisite: ELEE 468, Advisor Consent

An overview of energy sustainability and wind energy history. Wind resources characteristics. Fundamentals of physical wind, basic meteorology of wind, extraction of energy from wind. Basic introduction to wind energy and energy conversion systems. Various types of wind energy, conservation systems and aerodynamics; blade and tower structural loads, kinematics of blades and meteorology. Wind plant development, and environmental and ecological impact of wind energy plants. On and off-grid wind energy systems.

ELEE 574 Energy Conversion and Storage (3 Credits)

Prerequisite: Advisor Consent

An introduction to the principles, theories, and processes of devices and systems that convert thermal, chemical, nuclear, and electromagnetic energy into electrical or mechanical forms. Analysis of energy conversion and storage in thermal, mechanical, nuclear, chemical, and electrochemical processes in power systems, with emphasis on efficiency, performance, and environmental impact. Energy conversion and storage performance characteristics in a variety of

applications that include conventional fossil energy combustion-based systems, nuclear, solar, wind, and biomass systems. Energy storage types (i.e., batteries, electrolysers, compressed air, fuel cells, and flywheels).

ELEE 575 Green Buildings (3 Credits)

Prerequisite: Advisor Consent

This course will cover the principles of green building design and construction, including incorporating green principles in renovating and remodeling, and preservation of historic structures as well as new buildings. Energy efficiency, indoor environmental quality, and sustainable building materials. Greenhouse gas production, climate-appropriate building design, implementing energy efficiency measures. Prediction of building thermal, lighting, and solar access. PV modules in greenhouse building envelope. Technical aspect of the use of PV in buildings and the urban environment, such as heat transfer processes, partial shading, and mismatch and system siting, sizing and configuration will be investigated. System performance assessment and prediction.

ELEE 576 Hydrogen Energy Systems (3 Credits)

Prerequisite: Advisor Consent

This course will cover the principles of green building design and construction, including incorporating green principles in renovating and remodeling, and preservation of historic structures as well as new buildings. Energy efficiency, indoor environmental quality, and sustainable building materials. Greenhouse gas production, climate-appropriate building design, implementing energy efficiency measures. Prediction of building thermal, lighting, and solar access. PV modules in greenhouse building envelope. Technical aspect of the use of PV in buildings and the urban environment, such as heat transfer processes, partial shading, and mismatch and system siting, sizing and configuration will be investigated. System performance assessment and prediction.

ELEE 577 Special Topics in Renewable Energy Systems (3 Credits)

Prerequisite: Graduate Standing, Advisor Consent

Advanced topics selected from the broad area of renewable and sustainable energy systems to provide the student with knowledge of recent advances and contemporary development in this area.

ELEE 599 Research Methodology (3 Credits)

Graduate students working towards the M.S. degree are required to attend the seminars given by faculty, visiting scholars, and fellow graduate students. Additionally, each student must present at least one seminar on a timely research topic. Among other things, this course is designed to give the student an overview of research in the department, and a familiarity with the research methodology, journals and professional societies in his discipline.

ELEE 610-A Research Thesis (3 Credits)

ELEE 610-B Research Thesis (3 Credits)

ELEE 610-C Research Thesis (3 Credits)

ELEE 610-D Research Thesis (3 Credits)

ELEE 610-E Research Thesis (0 Credits)

Prerequisite: ELEE 599

The student has to undertake and complete a research topic under the supervision of a faculty member in order to analyze and solve a specific problem in the research area related to his/her specialization.

ELEE 611 Engineering Design Project (3 Credits)

Prerequisite: Advisor Consent

Application of knowledge and skills acquired during the study of the graduate program in the solution of open-ended, advanced level design problems from a technical, environmental and socio-economic viewpoint. Students can work with senior engineers from industry on a specific design project.

MASTER OF SCIENCE IN COMPUTER ENGINEERING (MCEN) PROGRAM

Overview

In 1440 H, the department introduced a Master of Science in Computer Engineering program, which was prepared according to the highest standards to match similar programs taught in world-class international universities, this is to prepare graduates for employment in, governmental organizations, educational institutions and other computer engineering enterprises.

The Master program designed to foster principles such as critical thinking, innovation and lifelong learning in various areas of computer engineering and to raise the awareness of their leading role in the development of their community. As the graduate program objectives integrate to achieve the FBSU mission, consequently, the university, over the past few years, has hired qualified faculty members of different ranks who have graduated from top universities all over the world and have rich experience in research and teaching as well.

The Master of Science in Computer Engineering curriculum is a two-year program designed to grant students the Master of Science in Computer engineering degree upon the successful completion of the requirements.

Mission

The Department of Computer Engineering is dedicated to providing students with a quality education in Computer Engineering, mathematics, physical sciences, and technology. We aim to expose students to significant research experiences, fostering leadership awareness in regional development. Committed to community engagement, we encourage students to apply their skills for positive societal impact.

Objectives

Graduates of the Master of Sciences in CEN program:

1. Possess skills and knowledge that qualify them for professional practice in computer engineering and for admission to reputable graduate programs.
2. Are capable of applying fundamental knowledge, appropriate mathematical principles and computing tools, critical thinking, and best practices in computer engineering analysis and design.
3. Are provided with an educational foundation that fosters creativity, teamwork, leadership, and communication skills, and prepares them for life-long learning along diverse career paths.
4. Have an appreciation of technical, social, economic, environmental, ethical, and global aspects of engineering practice.

Learning Outcomes

By the time of graduation, students with a Master's degree in CEN will be expected to demonstrate:

Knowledge and Understanding:

- **K1** Recognize and apply knowledge of Computer engineering
- **K2** Outline and reproduce designs and conduct experiments, as well as to analyze and interpret data
- **K3** Describe the design of a system, component, or process to meet desired needs within realistic constraints such as technical, economic, environmental, social, ethical, health and

safety, manufacturability, and sustainability.

K4 Recall and memorize concepts, principles, theories, and procedures in CE.

Skills:

S1 Analyze, and judge complex CE problems to provide solutions by applying principles of CE science, and research through critical thinking.

S2 Design and implementation of a computer-based system, process, or program to meet desired needs within realistic constraints.

S3 Analyze a problem, and identify the computing requirements appropriate to its solution.

S4 Demonstrate a good level and the ability to work effectively in a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

S5 Demonstrate communication skills such as writing, reading, presenting, negotiating and debating.

S6 Assess and Demonstrate skills in the usage of computer, network, and software packages relevant to CE.

Values:

V1 Show values of professional and ethical responsibilities as an individual or as part of a team.

V2 Demonstrate the ability for collaborative learning and working to finish team assignments and projects on time, while selecting and judging resources and recognizing economic, environmental impact, and ethical responsibilities in CE solutions.

V3 Operate and Communicate effectively with other members of the team and a range of audiences

Career Opportunities

The Department of Computer Engineering is committed to providing its students with meaningful, up-to-date skills and knowledge that will allow them to explore the education and skills of computer engineering. Furthermore, allows them to pursue successful careers and make deep impacts at leading commercial hardware and software companies. With these objectives in mind, the CEN graduate program is designed around fostering contemporary best practices and skills in line with the job opportunities for computing professionals.

Examples of career opportunities include:

- Computer Network Engineering
- Computer System and Application Development
- Software Design
- Digital Signal and Image Processing
- Integrated Circuit Design
- Internet Applications Development
- Robotics and Automated Manufacturing
- Engineering consulting
- Manufacturing
- Global communication systems
- Instrumentation

Degree Requirement:

The MCEN curriculum is a two-year program designed to grant students the Master of Science in Computer Engineering upon the successful completion of the requirements. In the first year; the student studies the required core courses, then in the second year, students are allowed to determine which electives they prefer along with writing a project or thesis distributed in the last two terms of the program.

A) Project Track (42 credit hours)

- Successful completion of a minimum of 39 credit hours of graduate courses.
- Completion and successful defense of a research project of 3 credit hours.

B) Thesis Track (42 credit hours)

- Successful completion of a minimum of 30 credit hours of graduate courses.
- Completion and successful defense of a research project of 12 credit hours.

Program Structure

The Master of Computer Engineering curriculum is a two-year program designed to grant students the Master of Science in Computer Engineering upon the successful completion of the requirements. In the first year; the student study the required core courses, then in the second year students are allowed to determine which electives they prefer along with writing project or thesis distributed in the last two terms of the program.

A) Project Track :

5 Required Courses	15 credit hours
8 Elective Courses	24 credit hours
Project (CEN 598)	3 credit hours
Total	**42 credit hours**

Curriculum Study Plan Table

Semester	Course Code	Course Title	Credit Hours
Semester 1	CEN 571	Advanced Computer Networks	3
	CEN 574	Advanced Computer Architecture	3
	CEN 576	Advanced Embedded Systems	3
	CEN 580	Programmable System-on-Chip	3
	Total		**12**
Semester 2	CEN 514	Research Methodology	3
		Elective course 1	3
		Elective course 2	3
		Elective course 3	3
	Total		**12**
Semester 3		Elective course 4	3
		Elective course 5	3
		Elective course 6	3
		Elective course 7	3
	Total		**12**
Semester 4		Elective course 8	3
	CEN 598	Project	3
	Total		**6**
Total			**42**

B) Thesis track:

5 Required Courses	15 credit
5 Elective Courses	15 credit
Research Thesis (CEN 600: A, B, C and D)	12 credit
Total	**42 credit hours**

Curriculum Study Plan Table (Thesis Track)

Semester	Course Code	Course Title	Credit Hours
Semester 1	CEN 571	Advanced Computer Networks	3
	CEN 574	Advanced Computer Architecture	3
	CEN 576	Advanced Embedded Systems	3
	CEN 580	Programmable System-on-Chip	3
	Total		**12**
Semester 2		Elective course 1	3
		Elective course 2	3
		Elective course 3	3
	CEN 592	Research methodology	3
	Total		**12**
Semester 3		Elective course 4	3
		Elective course 5	3
	CEN 600	Research Thesis (A, B)	6
	Total		**12**
Semester 4	CEN 600	Research Thesis (C, D)	6
	Total		**6**
Total			**42**

Required and Elective Courses

A) Required Courses:

Course Code	Course Title	Credit Hours
CEN 571	Advanced Computer Networks	3
CEN 574	Advanced Computer Architecture	3
CEN 576	Advanced Embedded Systems	3
CEN 580	Programmable System-on-Chip	3
CEN 592	Research Methodology	3
Total		**15 Credits**

B) Elective Courses:

Course Code	Course Title	Credit Hours
MSC 541	Selected Topics in Cybersecurity	3
MSC 502	Software Engineering	3
CEN 528	Advanced Computer Graphics	3
CEN 540	Advanced Topics in Computer Engineering	3
CEN 515	Advanced Wireless Sensor Networks	3
MSC 520	Artificial Intelligence	3
MSC 521	Computer Security	3
MSC 526	Data Warehouse and Mining Systems	3
MSC 540	Database System Implementation	3
CEN 538	Designing Software Systems	3
CEN 519	Digital Image Processing	3
CEN 511	Distributed Systems	3
CEN 525	Electronic Devices	3

Course Code	Course Title	Credit Hours
CEN 524	High Performance Computation	3
CEN 523	Information Theory	3
CEN 520	Intelligent Systems	3
CEN 532	Interconnection Networks	3
CEN 512	Mobile Computing and Wireless Networks	3
CEN 513	Network Security	3
CEN 521	Performance Analysis of Computer Networks	3
CEN 516	Robotics	3
CEN 570	Simulation and Modelling	3
MSC 522	Web Database and Information Retrieval	3
CEN 514	Wireless Ad-hoc Networks	3

Course Descriptions

A) Required Core Courses:

CEN 571 Advanced Computer Networks (3 Credits)
This course covers first-year graduate-level material in the area of advanced computer networks with an emphasis on OSI layered Architecture, Application layer, TCP/IP Protocols, and Data link layer, HDLC, Network layer, Datagram and virtual circuit, Error-detection and recovery, Presentation layer, Security, Privacy, and Text compression.

CEN 574 Advanced Computer Architecture (3 Credits)
This course covers material in the area of advanced computer architecture with a focus on pipelining, superscalar, parallel processors, hard-wired scheduling branch prediction, cache and virtual memory-hierarchy design, shared-memory and message-passing scalable multiprocessors.

CEN 576 Advanced Embedded Systems (3 Credits)
This course covers material in the area of advanced embedded systems which aims to provide comprehensive knowledge about embedded systems architecture, design and operation, programming and development, interfacing, applications, custom single-purpose processors design embedded systems peripherals design, keypad controller, UART, Timers, LCD controller, and embedded systems interfacing.

CEN 514 Research Methodology (3 Credits)
This course covers material in the area of research methodology and covers literature survey, design and implementation, findings and results, conclusion and research methodology. The course will enable the Researchers to develop the most appropriate methodology for their research studies.
Prerequisite: Senior stand

CEN 580 Programmable System-on-Chip (3 Credits)
This course covers material in the area of programmable system-on-chip and focuses on the basics of system-on-chip (SoC) design, hardware-software co-specification, co-synthesis, Network-on-Chip (NoC) systems and system-on-programmable-chip technologies.

CEN 599 Project (3 Credits)
Prerequisite: CEN 514
This course covers dissertation project that is accomplished via the formal, academic, and scientific approach under the supervision of an academic advisor.

CEN 600 Research Thesis (A, B, C, D) (12 Credits)
Prerequisite: CEN 514
This course covers dissertation thesis that is accomplished via the formal, academic, and scientific approach under the supervision of an academic advisor.

B) Elective Courses

CEN 511 Distributed System (3 Credits)
Prerequisite: CEN 571
This course covers material in the area of distributed systems and emphasizes architectural models varying from client/server to peer-to-peer, grid-computing, communication models varying from client-pull to server-push models, synchronization techniques, logical clock communications, timestamps, token ring, and communication standards such as RPC, RMI, CORBA and SOAP.

CEN 512 Mobile Computing and Wireless Networks (3 Credits)
Prerequisite: CEN 571
This course covers material in the area of mobile computing and wireless networks and emphasizes

digital modulation techniques, multiple access techniques for wireless systems, frequency reuse, cellular, microcellular, Pico cell, femtocell concepts, wireless networking standards, PAN (IEEE 802.15.1 (Bluetooth) and IEEE 802.15.4 (Zigbee)), wireless LAN (IEEE 802.11 a/b/g/n), 4G mobile wireless (LTE, LTE-advanced, and mobile WIMAX IEEE802.16e/m), radio and network resource management, systems issues such as performance evaluation, quality of service guarantees and reliability, cognitive radio networks, and mobile IP.

CEN 513 Network Security (3 Credits)

Prerequisite: CEN 571

This course covers material in the area of computer security and focuses on topics such as introduction to network security, symmetric encryption and message confidentiality, public key cryptography and message authentication, key distribution and user authentication, transport-level security, wireless networks security, intruders, and IP security.

CEN 514 Wireless Ad-hoc Networks (3 Credits)

Prerequisite: CEN 571

This course covers topics in the area of wireless Ad-hoc networks that covers basics of wireless communication, multipath, loss, noise, and interference, multiplexing techniques, wireless media access control protocols, Ad-hoc networks design, routing techniques, QoS in wireless networks, wireless networks standards such as Bluetooth, IEEE 802.11 a/b/g/n, IEEE 802.15 standards, and IEEE802.11e for differentiated services.

CEN 515 Advanced Wireless Sensor Networks (3 Credits)

Prerequisite: CEN 571

This course covers material in the area of advanced wireless sensor networks with emphasis on wireless sensor network protocols, deployment and coverage issues, applications, sensor hardware platforms (MOTES), Tiny OS, physical and link layers, MAC issues, localization, self-organization, time synchronization, power management, network layer protocols (energy-aware or attribute-based routing), node discovery protocols, data dissemination, data aggregation, cluster-based protocols (LEACH), query models, reliable transport protocols, and security issues in sensor networks.

CEN 516 Robotics (3 Credits)

Prerequisite: Senior standing

This course provides material in the area of robotics with the focus on topics such as robotics systems overview, mobile robotics analysis, challenges for autonomous intelligent systems, present the state of the art solutions, kinematics, sensors, vehicle localization, Map building, SLAM, path planning, and the exploration of unknown terrain.

CEN 519 Digital Image Processing (3 Credits)

Prerequisite: Senior standing

This course provides material in the area of digital image processing and explains topics such as fundamentals of digital image processing, image enhancement in spatial and frequency domains, image restoration, color image processing, image compression and multi-resolution image processing.

CEN 520 Intelligent Systems (3 Credits)

Prerequisite: MSC 520

This course provides material in the area of intelligent systems with an emphasis on knowledge-based intelligent systems overview, rule-based expert systems, uncertainties management in rule-based expert systems, fuzzy expert systems, frame-based expert systems, artificial neural networks, evolutionary algorithms, hybrid intelligent systems, knowledge engineering and data mining.

CEN 521 Performance Analysis of Computer Networks (3 Credits)

Prerequisite: CEN 571

This course covers material in the area of performance analysis of computer networks and explains fundamental performance analysis techniques, performance measurement methods, performance metrics, monitoring, experimental design, system modeling, queuing theory, Markov chains, performance bottleneck identification, characterizing the load on the system, determining the number and size of components, and mean value analysis.

CEN 523 Information Theory (3 Credits)

Prerequisite: MSC 521

This course provides material in the area of information theory and its applications to communications theory, computer science, statistics, and probability theory, quantities of entropy, relative entropy, and mutual information, and shows how they arise as natural answers to questions of data compression, channel capacity, rate distortion, and hypothesis testing.

CEN 525 Electronic Devices (3 Credits)

Prerequisite: CEN 576

This course provides material in the area of electronic devices and covers diodes, P-N junctions, Schottky barrier junctions, heterojunctions and ohmic contacts, bipolar junction transistors, field effect transistors, amplifiers, electronic devices for embedded systems, semiconductors and diodes in optoelectronics.

CEN 528 Advanced Computer Graphics (3 Credits)

Prerequisite: CEN 519

This course provides material in the area of advanced computer graphics with an emphasis on mathematics for three-dimensional computer graphics, hierarchical representation and basic shapes, surfaces and curves in three dimensions, three-dimensional modelling, solid bodies modelling, three-dimensional viewing, visible surface, illumination and shades, texture mapping, computer graphics systems such as open GL, and finally animation techniques.

CEN 532 Interconnection Networks (3 Credits)

Prerequisite: CEN 571

This course provides material in the area of interconnection networks and covers a review of general concepts, LAN and WAN, management of token ring networks, ISO model of seven layers, network standard specifications, urban networks, large bandwidth networks, network design and performance, network programming, error detection, security and privacy, interconnection networks evaluation criteria, interconnection networks design, classification and evaluation.

CEN 540 Advanced Topics in Computer Engineering (3 Credits)

Prerequisite: Senior standing

This course provides material in a company of topics of interest to the students.

CEN 570 Simulation and Modeling (3 Credits)

Prerequisite: Senior standing

This course covers material in the area of simulation and modeling with an emphasis on discrete-event simulation approaches, simulation cycle, probability, statistics in simulation, mathematical and statistical models, validation and verification of simulation models, random number generation, building valid and credible simulation models, modeling of simulation data, output data analysis, simulation software, distributed and parallel simulation, simulation techniques of some well-known systems such as queues, and applications to computer systems.

MASTER OF SCIENCE IN COMPUTER SCIENCE (MSC) PROGRAM

Overview

The Computer Science Department is a leading department in the College of Computing. It was established in 1424 H. The department has graduated hundreds of students from its BS programs.

Mission

We provide high-quality education in Computer Science, fostering research, critical thinking, and ethics. Our goal is to prepare graduates for meaningful contributions to technology, emphasizing community involvement and continuous learning.

Objectives

1. Continuous Learning: Graduates will commit to ongoing professional development, integrating the latest advancements to elevate education quality.
2. Ethical Conduct: Graduates will uphold professionalism and ethics, ensuring integrity in research and professional activities.
3. Leadership: Graduates will demonstrate leadership, initiating and guiding teams. They will actively engage in community participation, fostering collaboration and program impact on society.
4. Professional Skills: Graduates will excel as computing professionals, applying research findings to enhance project quality.

Learning Outcomes

The MSC program at FBSU strives to achieve success by ensuring that graduates demonstrate the following:

Knowledge and Understanding:

- **K1** Describe and illustrate knowledge of fundamental Mathematics, Science, and CS in Real life.
- **K2** List and describe major modern CS-related problems and reproduce acquired education to understand the impact of computer solutions to these problems in a global, economic, environmental, and societal context.
- **K3** List and define current up to date techniques, skills, and tools necessary for CS research and practices to meet desired needs within realistic constraints (economic, environmental, social, ethical, health and safety, manufacturability, and sustainability).
- **K4** Reproduce acquired skills to use CS in a business environment to gain a competitive advantage, improve performance, and increase the profitability of a business enterprise.

Skills:

- **S1** Examine and analyze issues related to the design and implementation of a computer-based system, process, or program to meet desired needs within realistic constraints.
- **S2** Demonstrate the ability to use mathematical foundations and system principles, of CS in the modelling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices
- **S3** Research the problems in a field of study and judge the efficiency and usefulness of acquired computing knowledge to solve them.
- **S4** Show the ability to practice design and development principles in the construction of software systems needed to carry out a research study.

Values:

- **V1** Demonstrate communication skills such as writing, reading, presenting, negotiating and debating
- **V2** Demonstrate understanding of professional and ethical responsibilities when working independently or as part of a team, and exhibit leadership characteristics
- **V3** Choose and judge resources, time and team members' management needed to accomplish teamwork promptly.

Program Tracks

1. Project Track (42 credit hours)
   - Successful completion of a minimum of 39 credit hours of graduate courses.
   - Completion and successful defense of a research project of 3 credit hours.
2. Thesis Track (42 credit hours)
   - Successful completion of a minimum of 30 credit hours of graduate courses.
   - Completion and successful defense of a research project of 12 credit hours.

Career Opportunities

1. Data Scientist/Analyst:
   - Analyze and interpret complex datasets to extract valuable insights.
   - Utilize statistical and machine learning techniques to inform business decisions.
2. Software Development Engineer/Programmer:
   - Design and develop software solutions for diverse industries.
   - Contribute to the creation of innovative applications and systems.
3. Cybersecurity Specialist:
   - Safeguard computer systems and networks from cyber threats.
   - Implement security measures and conduct vulnerability assessments.
4. AI/Machine Learning Engineer:
   - Develop and implement machine learning algorithms and models.
   - Contribute to cutting-edge advancements in artificial intelligence.
5. Network Engineer/Architect:
   - Design, implement, and manage computer networks.
   - Ensure the security and optimal functioning of data communication systems.
6. IT Consultant:
   - Provide expert advice on IT strategies and solutions for businesses.
   - Assist organizations in optimizing their IT infrastructure and processes.
7. Project Manager (IT):
   - Plan, execute, and oversee IT projects from inception to completion.
   - Coordinate teams and resources to ensure the successful delivery of projects.

Degree Requirements

The Master of Computer Science program spans two years and awards students with a Master of Science in Computer Science upon successful completion. In the first year, students focus on core courses. In the second year, they have the option to choose electives and engage in either a project or thesis during the last two terms.

Program Structure:

The Master of Computer Engineering curriculum is a two-year program designed to grant students the Master of Science in Computer Engineering upon the successful completion of the requirements. In the first year; the students study the required core courses, then in the second year students are allowed to determine which electives they prefer along with writing project or thesis distributed in the last two terms of the program.

A) Project Track :

5 Required Courses	15 credit hours
8 Elective Courses	24 credit hours
Project (MSC 598)	3 credit hours
Total	**42 credit hours**

Curriculum Study Plan Table

Semester	Course Code	Course Title	Credit Hours
Semester 1	MSC 501	Advanced Design and Analysis of Algorithms	3
	MSC 502	Software Engineering	3
	MSC 503	Database Systems	3
	MSC 504	Computer Networks and Security	3
	Total		**12**
Semester 2	MCS 514	Research Methodology	3
		Elective course 1	3
		Elective course 2	3
		Elective course 3	3
	Total		**12**
Semester 3		Elective course 4	3
		Elective course 5	3
		Elective course 6	3
	CEN 598	Project	3
	Total		**12**
Semester 4		Elective course 7	3
		Elective course 8	3
	Total		**6**
Total			**42**

B) Thesis Track :

5 Required Courses	15 credit hours
5 Elective Courses	15 credit hours
Research Thesis (MCS 600 A, B, C and D)	12 credit hours
Total	**42 credit hours**

Curriculum Study Plan Table

Semester	Course Code	Course Title	Credit Hours
Semester 1	MSC 501	Advanced Design and Analysis of Algorithms	3
	MSC 502	Software Engineering	3

	MSC 503	Database Systems	3
	MSC 504	Computer Networks and Security	3
	Total		**12**
Semester 2	MCS 514	Research Methodology	3
		Elective course 1	3
		Elective course 2	3
		Elective course 3	3
	Total		**12**
Semester 3		Elective course 4	3
		Elective course 5	3
	MCS 600	Research Thesis (A, B)	6
	Total		**12**
Semester 4	MCS 600	Research Thesis (C, D)	6
	Total		**6**
Total			**42**

Tracks Elective Courses:

1. Artificial Intelligence and Machine Learning

Course Code	Course Title	Credit Hours
MSC 520	Artificial Intelligence	3
MSC 522	Web Database and Information Retrieval	3
MSC 526	Data Warehouse and Mining Systems	3
MSC 534	Expert Systems and Knowledge Engineering Applications	3
MSC 536	Selected Topics in Artificial Intelligence	3

2. Computer Systems and Databases

Course Code	Course Title	Credit Hours
MSC 522	Web Database and Information Retrieval	3
MSC 523	Advanced computer Graphics	3
MSC 526	Data Warehouse and Mining Systems	3
MSC 530	High-Performance Computation	3
MSC 533	Selected Topics in Databases	3
MSC 538	Designing Software Systems	3
CEN 570	Simulation and Modelling	3
CEN 580	Programmable System-on-Chip	3

3. Computer Networks and Security

Course Code	Course Title	Credit Hours
MSC 521	Computer Security	3
MSC 530	High-Performance Computation	3
MSC 531	Distributed Systems	3
MSC 532	Interconnection Network	3
MSC 538	Designing Software Systems	3
MSC 541	Selected Topics in Cybersecurity	3

4. Software Engineering

Course Code	Course Title	Credit Hours
MSC 524	Graphical User Interface	3
MSC 525	Software Project Management	3
MSC 535	Software Quality Management	3
MSC 537	Selected Topics in Software Engineering	3
MSC 538	Designing Software Systems	3
MSC 540	Database System Implementation	3
CEN 570	Simulation and Modelling	3

Course Descriptions

A) Required Core Courses:

MCS 501 Advanced Design and Analysis of Algorithms (3 Credits)

The course provides a comprehensive review of fundamental data structures and essential design techniques. The course explores key methodologies such as Divide and Conquer, Greedy Method, Backtracking, and Dynamic Programming. Additionally, it covers advanced topics including Parallel Algorithms, Analysis of Algorithms, Orders of Magnitude, Lower Bound Theory, Time and Space Complexity, NP-hard and NP-complete problems, along with practical applications and examples. The course also addresses the correctness of algorithms and explores the structural aspects of algorithm development.

MCS 502 Software Engineering (3 Credits)

The course emphasizes the knowledge needed to be able to model, design, implement and evaluate larger software systems effectively. Software engineering is an inherently practical subject and applying the concepts being taught is a vital component of developing expertise in this area. The course aims to enable you to achieve the following: develop a deep understanding of the nature and impact of current challenges faced by the IT industry, Develop an awareness of the methodologies and technologies that are available within computer science to address these challenges, by evaluating and analyzing specific situations, and convey knowledge and develop practical skills in the use of some of these technologies, including both fundamental concepts and state-of-the-art support tools.

MCS 503 Database Systems (3 Credits)

To explain the concepts of Database systems, DBMS functions; database architecture and data independence, the different issues involved in the design and implementation of a database system, Data modeling, relational, hierarchical, manipulation and control languages to design and manage the database. Also, this course aims to explain the Database query languages: Overview of database languages; SQL; query optimization; 4th-generation environments; embedding non-procedural queries in a procedural language; introduction to Object Query Language and to design and build a simple database system and demonstrate competence with the fundamental tasks involved with modelling, designing, and implementing a DBMS, Relational databases, the essential DBMS concepts and relational database design.

MCS 504 Computer Network and Security (3 Credits)

To provide comprehensive knowledge of the concepts of hardware and networking, expose the students to the various networking components and their organization, provide the in-depth knowledge of the principles of routing and semantics and syntax of IP, an overview of the design and implementation aspects of networks, familiarize the student with current topics such as security, network management, sensor networks, and/or other topics, this course unit aims also to develop skills needed to go out and setup secured networks in small and medium sized organizations.

MCS 514 Research Methodology (3 Credits)

Prerequisite: Senior standing

This course aims to pay attention to all dimensions of research including, literature survey, design and implementation, findings and results, conclusion and research methodology. The course will enable the researchers to develop the most appropriate methodology for their research studies. The mission of the course is to impart research skills to the postgrads and help them improve the quality of their research by the existing researchers. The course also focuses on foundations of research such as objectives, motivation, and concept of theory, deductive and inductive theories. Characteristics of the scientific method, understanding the language of research, research process, problem identification and formulation, research question, research design such as concept and importance in research and features of a good research design.

MCS 599 Project (3 Credits)

Prerequisite: MSC 514

A dissertation project that is accomplished via the formal, academic, and scientific approach under the supervision of an academic advisor.

MCS 600 Research Thesis (12 Credits)

Prerequisite: MSC 514

A dissertation thesis is accomplished via the formal, academic, and scientific approach under the supervision of an academic advisor.

B) Elective Courses:

MCS 520 Artificial Intelligence (3 Credits)

Prerequisite: MSC 501

This course's focus is on the application of advanced techniques to address challenges in artificial intelligence. The course covers various aspects, including knowledge representation, evolutionary algorithms, supervised learning, learning by analogy, learning by discovery, self-reference, and self-production. It also explores reasoning, encompassing causal reasoning, common-sense reasoning, Bayesian networks, logical agents, approaches to reasoning with uncertainty, confirmation theory, belief theory, necessity and possibility theory, and the theory of endorsements. The course further explores spatial and temporal reasoning in the context of artificial intelligence problem-solving.

MCS 521 Computer Security (3 Credits)

Prerequisite: MSC 504

The course addresses a range of critical topics related to the security of computer systems. It delves into the realm of threats and vulnerabilities, emphasizing the importance of identification and authentication. The course covers access control mechanisms, strategies for intrusion detection, and the vital aspects of encryption and privacy within the realm of computer security. Furthermore, it explores the formulation and evaluation of security policies, providing a comprehensive understanding of the principles and practices essential for safeguarding computing environments.

MCS 522 Web Databases and Information Retrieval (3 Credits)

Prerequisite: MSC 503

This course commences with an examination of modeling principles, followed by a detailed study of query operations and the practical use of markup languages. The course extensively covers XML technologies and their applications, offering insights into effective web searching strategies. Additionally, it addresses Information Retrieval (IR) models and languages, focusing on indexing and searching techniques. A significant aspect involves the exploration of digital libraries. The course concludes with a hands-on project, where students actively engage in designing and developing components for Information Retrieval Systems.

MCS 523 Advanced Computer Graphics (3 Credits)

Prerequisite: Advisor Consent

Explores a comprehensive range of topics in the realm of computer graphics. The curriculum begins with a focus on the mathematics underpinning computer graphics in three dimensions. It then progresses to hierarchical representation and fundamental shapes, surfaces, and curves in three dimensions. The course extensively covers three-dimensional modeling, including solid body modeling and three-dimensional viewing. It addresses crucial aspects such as visible surface determination, illumination, shades, and texture mapping. Additionally, the curriculum delves into the practical application of Computer Graphics Systems, particularly Open GL. The course also encompasses animation techniques and concludes with a case study providing real-world application scenarios.

MCS 524 Graphical User Interface (3 Credits)

Prerequisite: MSC 502

This course aims to introduce the foundations of human computer interaction, examine and teach structured approaches to the design of human computer interaction and how it fits into overall system development, show how concepts from different disciplines are applied to the design of interactive SW systems, implement the techniques and skills to develop usable interactive SW systems, to be aware of the different interaction styles that can be used in the design of interactive software systems, to enable students to make sound judgments about the design of the user interface and its usability based on usability attributes and evaluation.

MCS 525 Software Project Management (3 Credits)

Prerequisite: MSC 502

In this course, students are introduced to fundamental principles of project management in the context of software development. The curriculum covers essential activities inherent in software project management, emphasizing the utilization of charts for effective project oversight. It explores the evaluation and acceptance criteria for different project phases, including advanced techniques relevant to project maintenance. The course delves into project scheduling, insurance, and arbitrage strategies. Practical aspects involve the use of project management tools. The learning experience is enriched through a comprehensive case study that provides real-world insights into the application of software project management principles.

MCS 526 Data Warehouse and Mining Systems (3 Credits)

Prerequisite: MSC 502, MSC 503

This course provides a comprehensive exploration of Decision Support Systems (DSS). It begins with an introduction to DSS and traces the development process. The curriculum covers data modeling techniques and the creation of a Data Warehouse within an architectural environment. A thorough examination of various Data Warehouse architectures and development techniques is included, along with a focus on user interfaces tailored for Data Warehouses. The course delves into the field of Data Mining, exploring its applications across different domains. As a practical component, students engage in a project involving the development of a prototypical Data Warehouse/Mining System, enhancing their hands-on experience in the subject matter.

MCS 528 Selected Topics in Computer Science (3 Credits)

Prerequisite: Advisor Consent

Students explore emerging trends and methodologies within the field of computer science. The course explores new developments and trends, offering insights into the methodologies of their application. It also encompasses an exploration of current research topics, providing students with a comprehensive understanding of the evolving landscape of computer science.

MCS 530 High-Performance Computations (3 Credits)

This course undertakes a thorough examination of significant factors contributing to performance degradation in scientific computing. The curriculum begins with a comprehensive review of these factors. It delves into the intricacies of the scheduling problem, including its classification and potential solutions. The course explores task scheduling and load-balancing algorithms to optimize computational efficiency. Additionally, it addresses the specific challenges of real-time systems, focusing on deadline scheduling to meet critical time constraints.

MCS 531 Distributed Systems (3 Credits)

Prerequisite: MSC 504

This course covers the foundational principles of operating systems, exploring key concepts in distributed systems. Topics include the architecture of distributed systems, control mechanisms (centralized vs. distributed), transparency forms, naming schemes, inter-process communication, resource allocation, load-sharing implications, load balancing, process migration, clock synchronization, and concurrency control in distributed environments.

MCS 532 Interconnection Networks (3 Credits)

Prerequisite: MSC 504

This course explores networking, covering LAN/WAN, token ring management, ISO model, and network standards. The course includes urban/large bandwidth networks, gate management, network programming, error detection, and security/privacy. It adopts a graph-theoretical approach, classifying networks like Mesh, Binary Tree, Hypercube, and more. Students examine computational speedup, factors limiting speedup, and laws such as Grosch's and Amdahl's, addressing the need for higher-performance computers.

MCS 533 Selected Topics in Database Systems (3 Credits)

Prerequisite: Advisor Consent

Students explore contemporary issues and recent research directions within the field of database systems.

MCS 534 Expert Systems and Knowledge Eng. Applications (3 Credits)

Prerequisite: MSC 520

Introduces students to expert systems and knowledge representation paradigms, with an emphasis on rule-based systems. The curriculum covers inference rules, resolution, and basic aspects of reasoning under uncertainty. Case studies, including MYCIN and CLIPS, are explored, along with application modeling in CLIPS.

MCS 535 Software Quality Management (3 Credits)

Prerequisite: MSC 502

An introduction to Quality Management Systems and Total Quality. The course explores the ISO Quality System and its application to the software industry. Students delve into the Capability Maturity Model (CMM) and its five levels, along with the Tick IT system. The curriculum covers Quality Assurance, the practical application of Quality Systems, and the utilization of software tools for quality. The course concludes with a case study to reinforce the concepts learned.

MCS 536 Selected Topics in Artificial Intelligence (3 Credits)

Prerequisite: Advisor Consent

Explores contemporary and research-oriented aspects of Artificial Intelligence. The course explores the methodology of applying AI concepts to real-world scenarios and addresses current research topics within the field.

MCS 537 Selected Topics in Software Engineering (3 Credits)

Prerequisite: Advisor Consent

Explores emerging trends in software engineering. The course explores the methodology of applying these trends in practical applications and addresses current research topics within the field.

MCS 538 Designing Software Systems (3 Credits)

Prerequisite: MSC 502

Reviews established methodologies and principles of Object Engineering. The curriculum emphasizes the Unified Modeling Language (UML) and includes a comparative study of available methodologies. The course covers the conversion methodology to object design, evaluation of object design using metrics, and practical applications of object methodology. The learning experience is enriched through a comprehensive case study illustrating the principles discussed.

MCS 539 Neural Network and Machine Learning Applications (3 Credits)

Prerequisite: MSC 520

Covers diverse machine learning approaches, including explanation-based learning, observation-based learning, and case-based learning. The course explores learning models, algorithm evaluation, and practical methodologies. It includes reinforced learning, genetic algorithms, and neural computations with examples and applications. The curriculum delves into the history and

fundamental concepts of artificial neural systems and discusses applications, including simulations and emerging uses of neural algorithms.

MCS 540 Database System Implementation (3 Credits)

Prerequisite: MSC 503

In this course we will study four major topics relating to database system implementation. The emphasis is on the systems components of a database management system. To better understand these components, a database implementation project will be required where you will build some of the basic ``system'' components for a simple database management system. We start with a brief overview of the basic components of a database system and discuss a set of open issues in designing and implementing a database management system, including relational DBMS and NoSQL database system before we detail the four core system components: Storage, Query Processing, Transaction Management and Distributed Data Management.

MCS 541 Selected Topics in Cybersecurity (3 Credits)

Prerequisite: MSC 504

This course explores advanced technological techniques and tools in cybersecurity. Students will use these technologies and skills to identify different categories of threats and implement corresponding countermeasures. Students will build knowledge of the tools needed to perform, encryption and authentication of data, operating system and application security, malware operation and analysis, reverse engineering, security design principles, techniques for reducing complexity, and formal security models.

COLLEGE OF MEDICINE

COLLEGE OF MEDICINE

Officers:	Bateha, Ahmed; Dean
Professors:	Bateha, Ahmed
Assistant Professors:	Alkhatib, Musaab
Lecturers:	Alamri, Sarah

College Overview

The College has the responsibility to educate and train physicians to provide the people of Saudi Arabia with quality, comprehensive medical care in their communities

The mission of the Fahd Bin Sultan University emphasizes the delivering of high-quality educational programs through distinguished faculty and administrative staff and modern educational and research facilities in an environment conducive for innovation and advancement of knowledge to inspire students' continuous learning, develop their skills, explore their potentials, and instill in them a sense of leadership while preserving a strong commitment to the highest ethical standards.

The mission of the medical college emphasizes excellence in innovative Medical education, and ethical research and quality healthcare delivery.

Vision

To be a premier medical college in medical education, healthcare and ethical research.

Mission

The College of Medicine is dedicated to graduating competent physicians who are committed to ethical practice, continuous development, providing excellent healthcare and conducting innovative basic and clinical research.

Values

Excellence, Creativity, Honesty, Integrity, Transparency, Attitude, Accountability, Social responsibility, Empathy, and Teamwork.

Goals/Objectives

The College of Medicine is dedicated to realizing the following goals and objectives:

1. Provide students with a solid foundation in basic medical sciences.
2. Provide students with and clinical skills and competincies.
3. Enhance students' proficiency in both content and procedural knowledge.
4. Develop and improve students' communicative competencies, cognitive abilities, and social skills.
5. Build a capacity for conducting applied health research relevant to the community needs.
6. Instill a commitment to serve the community and treat patients with respect and compassion.

7. Instill a commitment to lifelong learning and the principles of ethical and professional conduct in students.
8. Prepare students for graduate studies in their specialized fields.

Career Opportunities

The College is committed to providing it's students with meaningful, up- to-date skills and knowledge that will allow them to pursue successful careers and make deep impacts both within the Tabuk province, and across the Kingdom of Saudi Arabia. With these objectives in mind, the college program has been designed around fostering contemporary best practices and skills in line with the job opportunities in the highly demanding public and private health sector within Tabuk and the Kingdom of Saudi Arabia.

Academic Programs

The College of Medicine currently in its first year and offers one program: Bacelor of Medicine and Bachelor of Surgery. The college will consist of several departments for basic science and for each of the major clinical specialization.

Admission Requirements

The College of Medicine invites students with a sound academic record, good personal character, strong interest to serve their communities and eagerness to serve as professionals in the medical field.

Applicants must satisfy the following eligibility requirements:

- Fulfill University admission requirements.
- Hold a Saudi High School Certificate Science Section (or its Equivalent), with a General and Science Grade Point Averages as specified and announced annually by the University Council.
- Passed the National Skills Exam.
- Pass General Aptitude test.
- Satisfies the weighted average requirement set by the university council for the National Skills Exam, General Aptitude test and high school grade
- Hold a good conduct certificate.
- Present a "No-Objection" letter from the employer, if applicable.
- Should not have been dismissed from any academic institution for disciplinary reasons.
- Pass a physical fitness check-up.
- Satisfy any additional admission requirements of the applied to college and program.

The College accepts candidates on a competitive basis as seats are limited. Criteria for selection is primarly based on achievments in the National Skills Exam, General Aptitude test, and High School grades. Secondary criteria for selection include: English proficiency, IT competencies, and issuing year of High School Certificates.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (MBBS) PROGRAM

The program is an applied science that integrates theoretical and practical education and has very important roles in:

- Serving as a Medical Education Resource Center to related health professions and to the community and organizations involved in health care delivery.
- Promoting Continuing Professional Development to maintain and improve competency of all professionals engaged in health care delivery.

By combining teaching, health care, research and community service, the program enhances the university's mission of offering quality education for students, conducting scientific research and serving the local community.

Vision

To be a leading undergraduate medical program recognized for its ability to graduate competent and professional physicians.

Mission

The mission of the MBBS program is to educate, train and motivate medical students to be lifelong and reflective learners, skillful and proficient physicians who are conscious of their social responsibilities and competent in a broad range of diagnostic, communication and organizational skills; and who will hold themselves to the highest professional and ethical standards in order to provide exemplary medical care and conduct innovative scientific research.

Program Objectives

1. Graduate lifelong learners
2. Graduate reflective learners
3. Graduate skillful learners
4. Graduate Professional physicians

Program Outcomes

Successful graduates of this program are expected to:

PO 1 demonstrate understanding and application of Islamic ethics and values;

PO 2 be knowledgeable, skilled, reflective, critical thinker and compassionate;

PO 3 be innovative in their approach to problems solving;

PO 4 be skilled at accessing, appraising and applying the best available evidence to their everyday practice;

PO 5 demonstrate awareness of the social, ethical, economic and environmental context of health and illness and psychological wellbeing, and delivery of care;

PO 6 be committed to the health of populations as well as individuals;

PO 7 be concerned with issues of equity, quality and humanity in health care and who advocate for the disadvantaged and dispossessed;

PO 8 maintain high standards throughout their professional life by a commitment to life-long learning and teaching;

PO 9	have the skill to address the key questions relevant to the community and to medicine;
PO 10	be capable of leadership and are comfortable working as a team member;
PO 11	uphold the community's trust and expectations of the role of a doctor;
PO 12	be advocate for health by practicing preventive medicine and health promotion;
PO 13	recognize the essential role of research in underpinning medical practice;
PO 14	provide exemplary primary, secondary and tertiary health care and other related community health services.

Learning Outcomes

1.0	**Knowledge**
1.1	The legal requirements and protocols in clinical practice relating to the doctor-patient relationship, obtaining patient consent and maintaining confidentiality.
1.2	The ethical principles of the medical profession.
1.3	The structure of the medical interview, the key elements in a patient history and the basic elements of the patient case record.
1.4	The basic math, biology, chemistry sciences required for medical education.
1.5	Normal anatomy, histology, physiology, development and aging as integrated disciplines that provide a basis for understanding disease.
1.6	Mechanisms of drug action, pharmacokinetics, pharmacodynamics and therapeutics.
1.7	The genetic, biochemical, microbiologic, immunologic, physiologic, environmental and pathologic mechanisms underlying disease states and their treatment.
1.8	Neuroscience, nerve impulses and reflexes, cell- to-cell communication, and the molecular basis of cancer.
1.9	The psychological aspects of illness.
1.10	The clinical, laboratory, radiologic and pathologic manifestations of diseases.
1.11	Health maintenance, disease prevention, and the principles of epidemics and public health as they relate to the practice of medicine.
1.12	The structure and function of the health care system and how it affects the delivery of care.
1.13	The basic epidemiologic methods and statistical principles that underlie evidence-based medicine.
1.14	The influence of culture, race and ethnicity on the perception of illness and its treatment.
2.0	**Cognitive Skills**
2.1	Conduct a structured patient centered interview; elicit a structured, comprehensive, direct and logical medical history.
2.2	Identify, access, interpret and apply scientific literature.
2.4	Perform a careful, accurate, complete and directed physical examination.
2.5	Competently perform common technical procedures.
2.6	Reason deductively to solve clinical problems, including those in which information is incomplete or ambiguous.
2.7	Select and interpret results of appropriate and evidence-informed diagnostic tests based on differential diagnosis.
2.8	Correctly diagnose common illnesses based upon historical, physical examination and laboratory data.

2.9	Recognize and incorporate into clinical decision making the important psychosocial determinants contributing to poor health.
2.10	Construct and execute a therapeutic plan.
2.11	Recognize and respond appropriately to medical situations including emergencies and that are immediately life threatening.
3	**Interpersonal Skills & Responsibility**
3.1	Maintain an appropriate standard of behavior including demeanor, appearance and meeting commitments.
3.2	Adhere to and uphold the professional, legal, ethical principles in all interactions.
3.3	Employ and exemplify altruism, accountability, excellence, duty, service, honor, integrity, and respect for others into all aspects of their professional lives.
3.4	Exhibit compassionate treatment and respect of patients dignity, confidentiality and autonomy.
3.5	Demonstrate sensitivity and responsiveness to culture, age, gender, religion, and disabilities of patients, patients' families, faculty, residents, other health care professionals, and peers.
3.6	Build therapeutic relationships with patients and demonstrate commitment to the well-being and needs.
3.7	Demonstrate social responsibility and a commitment to promote the health and well-being of the communities they serve.
3.8	Utilize the principles of cost-effective patient and community care.
3.9	Demonstrate commitment to excellence and ongoing professional development.
3.10	Demonstrate commitment to lifelong learning and an appreciation for the role of science and research in medical advances.
3.11	Recognize and exhibit respect for the roles of other health care professionals.
3.12	Work effectively with the other members of the health care team and exhibit willingness to lead when leadership is required.
3.13	Accept criticism and to understand the limitations of one's own knowledge and skills.
3.14	Manage workload, risks, uncertainty and stress.
4.0	**Communication, Information Technology, Numerical**
4.1	Communicate effectively with patients, families, colleagues and other health care professionals.
4.2	Maintain accurate, comprehensive, legible and up-to-date medical record documentation.
4.3	Employ information technology effectively for patient care.
4.4	Demonstrate basic skills in accessing research materials from personal, print and electronic sources and provide structured and effective case presentations.
4.5	Demonstrate the ability to deliver and prioritize concise and accurate summaries of patient assessments and management plans to all members of the health care team.
4.6	Demonstrate respect for cultural and ethnic backgrounds of patients and their families and other members of the health care team.
5.0	**Psychomotor**
5.1	Perform hygienic hand washing and injecting (intramuscular and subcutaneous).
5.2	Measure, monitor and determine vital signs in patients.

PROGRAM POLICIES, RULES AND GUIDELINES

The following are the Policies and Guidelines for granting a Bachelor's degree in the Doctor of Medicine Issued by the University Council in accordance with the system of granting scientific degrees and certificates at Fahd Bin Sultan University and implemented from the date of issuance.

These Policies and Guidelines are particular to and are applicable only to the MBBS program, and apply to all enrolled students in the MBBS program. They have priority and override the general policies, rule and guidelines of all other college and programs.

Article 1

This set of guidelines is known as the Protocol for the awarding of a Bachelor's degree in the specialized field of Medicine and Surgery. It shall be implemented as of the University Council's decision date.

Article 2

The stipulations outlined herein shall pertain to regularly enrolled students seeking to obtain a Bachelor's degree within the specialized domain of Medicine and Surgery.

Academic Curriculum

Article 3

The University Council sanctions the academic curriculum leading to a Bachelor's Degree in the specialty of Doctor of Medicine and Surgery, along with any modifications recommended by the Faculty of Medicine Council and the Curriculum Review Committee.

Article 4

A) The academic curriculum shall adhere to an annual system across all academic years leading to a Bachelor's Degree in the field of Doctor of Medicine, encompassing mandatory courses specified within the curriculum.

B) Each course in the academic curriculum shall be allocated a predetermined number of credit hours specified in the curriculum.

C) A distinct number shall be assigned to each course within the curriculum.

D) Details such as credit hours, lecture frequency, laboratory sessions, practical training hours, and clinical rotations shall be outlined for each course in the academic curriculum, with assessments conducted on a semester or annual basis.

Article 5

A) The minimum credit hours required for the Bachelor's Degree in Doctor of Medicine and Surgery program is set at 247 credit hours.

B) The distribution of credit hours for the Doctor of Medicine and Surgery program is as follows:

Nature of Requirements	Number of Mandatory Credit Hours	Number of Elective Credit Hours	Total
University requirements	33	3	36
Basic science requirements	13	0	13
College Requirements	194	4	198
Total	240	7	247

Article 6

A) The study plan for the Bachelor's Degree in Doctor of Medicine mandates the completion of university requirements, totalling 36 credit hours.

1. Mandatory requirements: 33 credit hours distributed as follows:

Course Code	Course Name	Credits	Pre-Requisite
ENGL 115	English for Medicine I	4	
ENGL116	English for Health Care Professions I	3	
CSC 131	Computer Skills	3	
MED 101	Biostatics	3	
MED 102	Contemporary Medical Topics	1	
ENGL 117	English for Medicine II	3	ENG 115
ENGL118	English for Health Care Professions II	3	ENGL116
LRSK 142	Communication Skills	3	
PHED 152	Health & Physical Education	1	
SOCS 151	An Introduction to the Islamic Culture	3	SOCS 151
SOCS 152	Faith and Ethic	3	SOCS 152
SOCS 351	The Economic, Political and Social System of Islam	3	SOCS 351
	Total credits	33	

2. Elective requirements: 3 credit hours of the student's choice from the following courses:

Course Code	Course Name	Credits
ACCT 110	Financial Accounting	3
ASTR 150	Introduction to Astronomy	3
CSC 210	Computer Skills for Social Sciences	3
CIT 101	Future Technologies	3
CHEM 150	Chemistry and Society	3
MNGT 110	Principles of Management	3
FREN 101	Basic French I	3
SOCS 203	History of the Kingdom of Saudi Arabia	3
SOCS 202	World Civilization	3

B) Compulsory Medical school requirements:

1. Mandatory medical school prerequisites: Requirements of the College of Sciences and Humanities include earning 13 approved credit hours.

Course Code	Course Name	Contact Hours		Credit Hours
		Practical	Theoretical	
BIO 103	General Biology	-	3	3
MED 291	Medical Physics	-	3	3
BIO 107	General Biology (Practical)	3	-	1
CHEM 103	General Chemistry	-	3	3
CHEM 107	Organic Chemistry	-	3	3
	Total	3	12	13

The Faculty of Medicine outlines specific requirements totalling 198 credit hours, which students must complete in accordance with the designated sequence and numbers specified in the study plan. The plan also clarifies the nature of each course, whether it involves theoretical instruction, practical learning, or clinical training.

2. Faculty of Medicine Requirements: 198 credit hours

Pre-clerkship Compulsory Courses (83 credit hours)

Course Code	Course Name	Credit Hours	Weekly hours	
			Lectures	Practical
MED 173	Medical Terminology	2	2	0
MED 114	Cell Biology & Tissues	3	2	2
MED 115	Anatomy and Embryology	4	3	2
MED 132	Physiology	3	3	0
MED 202	Biochemistry	3	3	0
MED 284	Health administration informatics, economics and population care	3	3	0
MED 222	Medical Genetics	3	3	0
MED 231	Pathology	3	2	3
MED 232	Immunology	3	3	0
MED 251	Pharmacology	3	3	0
MED 265	Microbiology	3	2	3
MED 282	Neurosciences	6	5	3
MED 305	Haemopoietic & Lymphatic system	6	4	6
MED 310	Musculo-skeletal system	6	4	6
MED 311	Gastro-intestinal system	6	4	6
MED 321	Endocrine system	4	3	3
MED 352	Urinary and reproductive systems	8	6	6
MED 353	Respiratory system	6	4	6
MED 364	Cardio-vascular system	6	4	6
MED 370	Professionalism, ethics, and legal medicine	2	2	0
	Total	83	65	52

Clerkship Compulsory Courses (111 Credit Hours)

Course Code	Course Name	Credit Hours	No. of weeks
MED 411	Medical Communications & Clinical skills	5	5
MED 415	Clinical Psychology	3	3
MED 416	Forensic medicine	2	2
MED 417	Dermatology	2	2
MED 418	Anaesthesia & ICU	4	4
MED 419	Diagnostic Radiology	2	2
MED 420	General Surgery I	8	8
MED 422	Internal Medicine I	8	8
MED 430	Community medicine and research project	8	8
MED 507	Paediatrics I	8	8
MED 510	Obstetrics & Gynaecology I	8	8
MED 530	Family Medicine	4	4
MED 540	Psychiatry	4	4
MED 550	Ear, Nose & Throat	2	2
MED 553	Orthopaedics	2	2
MED 555	Neurology & Neurosurgery	3	3
MED 560	Ophthalmology	2	2
MED 610	General Surgery II	8	8
MED 620	Internal Medicine II	8	8
MED 630	Paediatrics II	8	8
MED 640	Obstetrics & Gynaecology II	8	8
MED 650	Emergency Medicine	4	4
	Total	111	111

3. Medical school elective requirements:

Clerkship Elective Courses:

Students within the Faculty of Medicine have the opportunity to fulfil their elective requirement by selecting courses offered by the clinical sciences department or from other esteemed teaching hospitals, both locally and internationally. Students are required to choose a total of 4 credit hours (equivalent to 4 weeks) from the curated list of courses presented below.

Course Code	Course Name	Credit Hours	No. of weeks
MED 611	General Surgery	4	4
MED 650	Public Health	4	4
MED 651	Occupational Medicine	4	4
MED 621	General Medicine	4	4
MED 631	Paediatrics	4	4
MED 652	Epidemiology	4	4
MED 653	Research Project	4	4
MED 641	Obstetrics & Gynaecology	4	4
MED 654	Family Medicine	4	4
MED 622	Psychiatry	4	4
MED 612	Ear, Nose, and Throat	4	4
MED 613	Orthopaedics	4	4
MED 615	Ophthalmology	4	4
MED 624	Dermatology	4	4
MED 625	Diagnostic Radiology	4	4
MED 626	Forensic Medicine and Toxicology	4	4
MED 616	Urology	4	4
MED 627	Pathology & Laboratory Medicine	4	4

Duration of Study and Academic Load

Article 7:

A) The period of study required to obtain a Bachelor's degree in the field of Medicine is six academic years, in addition to a year for training. The study plan details the courses provided in each academic year.

B) The maximum study duration to earn a Bachelor's degree in Medicine is nine academic years for students enrolled in the program.

C) In accordance with paragraph B of this article, students are not permitted to spend more than two academic years in any of the first five years or exceed three years in the sixth year.

D) Each academic year in the initial three years includes two academic semesters, each lasting 16 weeks, encompassing exams, along with an eight-week summer semester, including exams.

E) The clinical year is defined concerning consecutive clinical years, based on a schedule approved by the college council at the start of each academic year.

F) Students are restricted from enrolling in a scientific course more than once at the same level. Failure to adhere to this rule deems their registration and grade for that course null and void.

G) A student cannot progress to the fourth-year level unless they have fulfilled all obligatory and elective university requirements totalling 36 credits. Exceptions may be granted in warranted cases by the college.

H) The university council may grant a student an additional academic year to complete the requirements for the degree beyond the stipulated maximum period, provided that this extra year facilitates their graduation.

I) It is not permissible for students to register for or study a course that they have been exempted from for any reason.

J) Students are required to strictly adhere to registering for courses as outlined in the study plan. Failure to comply results in the nullification of their registration and grade for that course. Registering for courses outside the study plan is prohibited.

Attendance Requirement

Article 8

A) The student is required to maintain attendance in all courses in which they are enrolled, and the course instructor is responsible for recording absences in the course's electronic attendance system regularly within ten days of the absence. The percentage of absence referred to in the following paragraphs of this article is calculated based on face-to-face lectures for courses taught in person, or through blended learning methods, with attendance being synchronous for courses taught online. The student is electronically notified regularly.

B) If a student is absent for more than 25% of the total scheduled hours for the course, regardless of the reason for the absence, they are prohibited from taking all subsequent examinations in that course and are assigned the code DN "Deprived Due to Absence." The points earned in this course factor into the student's grade average for that year. The student is allowed to take A Resit Exam (for scientific courses only) after coordinating with the relevant department to compensate for the clinical training missed during the fifth and sixth years and compensating fully (100%) for the clinical training during the sixth year. The dean of the college has the authority to grant the student permission to exceed the absence limit of 25% of the total scheduled hours for the course due to an unavoidable excuse, provided the total absences do not exceed 30% in any case.

C) In cases where a student exceeds a 25% absence with an acceptable excuse, the College of Medicine considers them withdrawn from the academic year (without fee charges) starting from the semester of absence. The dean of the College of Medicine informs the student in writing or electronically before the final exams start, and their studies are considered deferred for that year.

D) Withdrawing from registered courses is not permissible for the student in any academic semester, including the summer semester.

E) If a student is absent from practical training for a period not exceeding 25% of the training duration, and the absence is due to a valid excuse or illness accepted by the dean of the college, the dean may allow the student to make up for the missed training period if it does not affect the technical training. Practical training does not include work in hospitals and clinics supervised by faculty members.

F) A medical excuse certificate issued by the university health centre or student clinic, or governmental hospitals, is required for a medical excuse. The student must submit this certificate to the dean of the college offering the course within two weeks of the student's absence, or within one week in urgent cases.

G) Course instructors, department heads, and deans of colleges offering the courses are responsible for implementing the attendance regulations.

Exams Scores and Point Averages

Article 9

A) The quarterly or annual grades, the final exam grade, and the final grade due shall be calculated to the nearest whole number, and the final grade due shall be out of one hundred, then the final grade shall be converted into a code and its equivalent points electronically according to the table in Article 11.A of these instructions.

B) The general framework for exams and grading is as follows:

1. The final grade for each course is the sum of the final exam marks and the semester work marks, with some courses potentially resulting in a pass or fail according to the study plan.
2. The final exam for each course is held once, either at the end of the semester or the end of the year, depending on the course's nature. The exam is written or computerized, covering the course content, and may incorporate an oral or practical component, or reports with a specific weighting.
3. The quarterly or annual course work includes:
    i. Oral exams, reports, research (partially or fully), or clinical requirements.
    ii. Quarterly or annual exams are announced to students at least one week before, with answers discussed with students' post-correction. Written exam papers or results should be returned within one week after the exam.
    iii. Evaluations of discipline, behaviour, and attendance within mechanisms announced to students by the first week of the course.
4. If a student misses the semester or annual exam, they must provide a compelling or satisfactory excuse to the department head or course coordinator. The decision on approving the excuse is made within 48 hours, with a makeup exam scheduled within a maximum of 72 hours if the excuse is accepted, otherwise, a zero grade will be assigned.
5. Students grades posting process:
    i. Instructors must enter and publish semester grades to students by the 13th week of the first and second semesters, and by the end of the 7th week of the summer semester.
    ii. The course instructor must approve semester work grades by the end of the 15^{th} week.
    iii. The dean of the concerned college has the authority to decertify semester work until the final exams end.
    iv. All mark-related activities are documented from upload to approval on the Student Information System (SIS), with the dean having viewing authority.
    v. Any subsequent marking after the semester ends is modified through the marking adjustment process.
6. If a student fails to meet course requirements or is absent from the final exam without a valid excuse, they receive an "incomplete" grade for the course. An exam schedule is set for these courses to be held within the first two weeks of the following semester, or in the case of the summer semester, before the start of the next academic year.
7. If a student is absent from the makeup exam, they receive a zero, which affects their final course grade.
8. A student with an "incomplete" grade cannot defer their studies unless the grade is resolved within the specified period. Otherwise, the student's semester work grade is recorded by the admission and registration unit.

C) The general framework for exams and their schedules for students is as follows:

1. Theoretical and practical courses:

   i. Semester work accounts for 60%, consisting of two midterm exams (30 marks each), and the final exam accounts for 40%.

   ii. Practical courses: The department council specifies how marks are allocated for practical courses before the start of the semester.

2. Courses in the third year: 60% allocated for the theoretical component, and 30% for the practical and clinical part, with 5% for research and entrepreneurial activities, and 5% for evaluations of discipline, behaviour, and attendance.

3. Courses in the fourth and fifth years, excluding the courses MED 430 Community Medicine and Research Project in the fourth year and MED 530 Family Medicine in the fifth year, distribute the final grades for each course as follows:

   i. 15% for teacher evaluation of the course during clinical training, including assessments of discipline, behaviour, attendance, research projects, and entrepreneurial activities.

   ii. 40% for the clinical exam conducted after the completion of the clinical training period for the course, with the department council setting the exam date. The examination methods may include long and short case studies, oral examinations, Objective Structured Clinical Examination (OSCE), or simulation-based exams.

   iii. 45% for the written or computer-based exam held once at the end of the academic year for all students after completing the clinical training, as determined by the college council at the beginning of each academic year.

4. Courses in the sixth year distribute the final grades as follows:

   i. 50% for semester work, allocated as:

      - 20% for teacher evaluation during clinical training, including assessments of discipline, behaviour, attendance, research projects, and entrepreneurial activities.
      - 30% for the clinical exam.

   ii. 50% for the final exam, distributed as:

      - 40% for the written or computer-based exam.
      - 10% for the oral exam.

The College of Medicine Council sets exam schedules at the beginning of each academic year.

D) Examination procedures and regulations, including preparation, conduct, evaluation, analysis, and treatment of exam results, are governed by specific rules issued by the College of Medicine Council.

Article 10

A) At the beginning of each academic semester, the course instructor informs their students about the method of assessing student achievement.

B) The course instructor corrects the final exam of their course, reviews the grades, enters them into the electronic system, and approves them within a maximum period of 48 hours from the date of the final exam. These grades are then reviewed and approved by the Department Council (or the Dean for organ system courses) and the College Council within 24 hours, including holidays. The college retains a hard copy of the approved results for the students.

C) The Dean of the college or their delegate electronically approves the final results for all courses offered at the college immediately after review.

D) After paying the required fees, students or instructors can request a review of the final exam grade (either in writing or electronically through the grade review system) after calculating the semester averages, with a maximum of 6 weeks from the next semester of the registered course, including the summer semester if the student is enrolled in it. The following procedures must be followed:

1. The Dean forms internal committees to review and correct final exam papers and refers them to the Head of the Department or the Dean for action, with the committee members meeting the following conditions:
   i. The course instructor is not a member of the committee.
   ii. The ideal solution provided by the course instructor is approved.
   iii. The same committee in the department will handle cases where more than one student requests a grade review.
2. The Head of the Department enters and approves the student's grade (electronically or in writing).
3. The Head of the Department electronically or in writing approves or rejects the request.
4. The Dean electronically or in writing approves or rejects the request.
5. Accepted grade revision requests approved by the Dean are presented to the Higher Committee for Grade Revision for appropriate decision-making.
6. The student's academic status is adjusted based on the grade revision retroactively.
7. A student loses the right to request a grade revision if they defer their studies to the semester following the one in which the course to be modified was taken.

E) All exam papers, reports, and research works are discussed with the student after correction and grading. Final exam papers are kept at the College Dean's office for one academic semester for future reference and then handled by the Dean as needed.

Article 11:

A) Grading System and Codes

Grade	Points	Letter Grade	Grade Interpretation
95-100	5.00	A+	Outstanding
90-94	4.75	A	Excellent
85-89	4.50	B+	Superior
80-84	4.00	B	Very Good
75-79	3.50	C+	Above Average
70-74	3.00	C	Good
65-69	2.50	D+	High Pass
60-64	2.00	D	Pass
Below 60	1.00	F	Fail
AU			Audit
DN			Denied
DS			Disciplinary Action
NP			No grade-Pass (Not considered in GPA Calculation)
NF			No grade-Fail (Not considered in GPA Calculation)
IC			Incomplete

Grade	Points	Letter Grade	Grade Interpretation
IP			In Progress
W			Withdrawn
WF			Withdrawn - Fail
WP			Withdrawn – Pass
T			Transfer

B) General Graduation Grade

The grade stated on the graduation diploma depends on student's GPA at the time of graduation as follows:

GPA	GRADE
At least 4.50	Excellent
At least 3.75 and less than 4.5	Very Good
At least 2.75 and less than 3.75	Good
At least 2.00 and less than 2.75	Pass

C) The Dean will include the name of any student who achieves an annual average of 4.25 or higher on the college honour list and record it in the student's academic record unless they have been previously dismissed or failed a course. This is applicable as long as the student's academic workload consists of at least 12 credit hours, excluding remedial courses.

1. Annually, the President of the University will release the University Honour List, which will feature the names of students who have earned annual averages of 5.00 or above and are included in the college honour lists.
2. The top student in the college is determined as the student with the highest overall average among their graduating cohort, with a maximum study period of 6 years considered for this evaluation.

Article 12

The department council appoints one of the course instructors as a coordinator in the case of a course being taught by more than one instructor, in collaboration with the other course instructors and under the supervision of the department head.

The department council appoints one of the course instructors as a coordinator in the case of multiple sections for a course, in collaboration with the other course instructors and under the supervision of the department head.

The department head, course coordinator, or a teacher selected by the department council is responsible for supervising the printing of exam questions after they have been discussed and approved by the department council, as well as overseeing the grading of exam papers and ensuring the proper transfer of results to transcripts and records in the case of courses taught by multiple instructors or multiple sections.

Article 13

A) The minimum passing grade for each course is D.

B) The minimum passing grade for annual averages is 2.00 and the minimum passing grade for the overall GPA is 2.00.

C) The failing grade in a course is F.

D) The annual or overall GPA is calculated to the nearest two decimal places.

E) The overall GPA for a student majoring in Medicine and Surgery consists of:

1. 70% for the annual average of each of the first five years equally, by adding the products of each annual average multiplied by 14% and rounding the result to the nearest two decimal places.
2. 30% for the annual average of the sixth year to the nearest two decimal places.

Article 14

The annual GPA for the first year is calculated by multiplying the number of points for each course in the first year's guided plan by its accredited hours and dividing the sum of the resulting products by the total number of accredited hours.

The results of all courses, including mandatory and elective university requirements, studied by the student, and included in the study plan, are taken into account when calculating the annual GPA for the first year upon enrolment in the university after completing studies or upon graduation. The annual GPA for the first three years is calculated if the number of accredited hours is 12 hours or more. If the student retakes any of these courses during their studies, the highest grade for that course is considered.

Article 15

To calculate the annual average for the next five years (from the second year to the sixth year), multiply the points for each course (excluding university requirements) by the credit hours for each course in the academic plan for that year. Then, divide the total sum of these products by the total number of credit hours for that year.

Promotion Requirements

Article 16

To progress from one academic year to the next, a student must meet the following requirements:

A) Successfully completing all scientific courses studied in that year as outlined in the academic plan.

B) Attaining an annual GPA of 2.00 or higher, as defined in Articles 13, 14, 15.

C) The student is only promoted to the next academic year at the end of the current academic year, after passing all scientific courses from previous years.

Article 17

A) Criteria for first-year students transitioning to the second year:

1. Passing all specified scientific courses, including MED 101, MED 291, BIO 103, BIO 107, CHEM 103, and CHEM 107, and achieving an annual GPA of 2.00 or above.
2. If a student fails one or two scientific courses from the first year as specified in clause A.1 of this article, they may take a RESIT EXAM (supplementary exam) for up to two courses before the start of the first semester of the following academic year, as determined by the Dean of the College offering the course.
3. If a student passes all scientific courses in the first year but obtains a GPA lower than 2.00, they may take a RESIT EXAM (supplementary exam) for one or two selected courses before the start of the first semester of the following academic year, with the new grade being recorded as instructed by the Dean of the College offering the course.

4. Incomplete course exams taught during the summer semester will be held before RESIT EXAMS.

B) A student is considered to have failed in the first year if they meet one or more of the following conditions:

1. Failing in more than two scientific courses specified in paragraph A.1 of this article.
2. Failing a course after the RESIT EXAM.
3. Failing to achieve an annual GPA of 2.00 or higher after the RESIT EXAM.

C) If a student fails in the first year, they are permitted to retake the year once, with the regulations regarding passing, failing, and RESIT EXAM applying to the courses failed and being repeated from the first year.

D) The following regulations apply to students who fail in the first year:

1. Retaking all failed scientific courses approved for the first year.
2. Retaking all specified scientific courses in Article 17.A.1 where a grade lower than D was obtained, with the new grade for the repeated course included in the calculation of the annual GPA.

Article 18

A) Transfer requirements for students in their second, third, fourth, fifth, and sixth years are as follows:

1. Students must successfully pass all approved courses for that year as per the study plan, excluding university requirements, and achieve an annual average of at least 2.00.
2. In the case of failing one or more courses in the second or third year, students have the opportunity to take a RESIT EXAM for the failed courses before the start of the next semester in the following academic year. The Dean of the College will set the date for the completion exam. If a student fails the REST EXAM for any course, they will not progress to the next year and will be considered to have failed that academic year.
3. In the event that a student fails to pass a course or courses totalling at least 9 credit hours in the fourth or fifth year, they are eligible to take a RESIT EXAM in the failed courses. Should the student fail the RESIT EXAM in any of those courses, they will not be permitted to progress to the following year and will be deemed to have failed that particular year.
4. If a student does not achieve a passing grade in a course during the sixth year, they are entitled to take A RESIT EXAM after completing the full clinical training in that specific course. Success in the RESIT exam will result in the student being considered to have successfully completed the sixth year. Conversely, failure will lead to the student being classified as having failed in the sixth year.
5. A student who successfully completes all required courses in the second, third, fourth, fifth, and sixth years but earns an annual GPA below 2.00 is eligible to take a RESIT EXAM in one or two courses from the second or third year, and in courses totalling at least 9 credit hours from the fourth, fifth, or sixth years (after completing full clinical training in the sixth-year courses selected by the student from that year) before the start of the subsequent academic year, as determined by the college dean. Failure to raise the GPA to 2.00 or above will result in the student not being able to advance to the next year and being deemed to have failed that year. Incomplete exams for courses taken during the summer semester of the second and third years (as outlined in the approved student plan) will be held prior to the RESIT EXAM, with makeup exams conducted before the start of the first semester of the following year, concluding no later than the first week of the semester. RESIT EXAMS grades will be confirmed within one week of the completion period.

6. RESIT EXAMS for the third, fourth, and fifth years will be administered before the official commencement of the subsequent academic year.
7. A student who has an incomplete grade in a scientific course or requires a grade adjustment for a scientific course may apply to take the RESIT EXAM provided they meet the makeup requirements, excluding the particular course in question.

The completion mark must be finalized within a maximum of one week after the completion of the incomplete period in accordance with article 9.B.6 or following the adjustment of the mark.

B) In addition to the stipulations outlined in condition A of this clause, a student shall be deemed to have failed in any academic year ranging from the second to the sixth if:
   1. They fail in more than two courses in the second or third year.
   2. They fail in courses totalling more than 9 credit hours in the fourth, fifth, or sixth years.
   3. They do not achieve a GPA of 2.00 or higher following the completion examination.
   4. If a student fails a course after the RESIT exam, they will not progress to the next academic year and will be deemed to have failed in that particular year.

C) If a student fails in the second, third, fourth, or fifth years, they are permitted to retake those years only once, provided they do not exceed the specified maximum limit.

D) In the event of a student failing in the sixth year, they are allowed to repeat it a maximum of two times, with the same condition regarding the maximum limit.

E) When a student fails in any of the second, third, fourth, fifth, or sixth years, the following provisions apply:
   1. The student must retake all courses designated for that year within the medical school with grades below a 'C'. The new grade points will be factored into the annual average.
   2. Courses in the sciences that have received a grade of 'C' or higher are not allowed to be retaken.

F) Should a student opt to sit for a RESIT EXAM for specific courses as outlined in section A of this policy, the new grade obtained will be documented in the mark sheet, subject to the following conditions:
   1. If the student's pre-completion annual average is below a 2.00, the new grade obtained in the mark sheet will be recorded as long as it does not exceed the average 2:00 for that academic year even his new grade exceeds this average.
   2. If the student's annual average before taking the RESIT EXAM is a 2.00 or higher, the new grade obtained in the mark sheet will be capped at a 'C' for that particular course for the purpose of calculating their final year-end average, even if the grade obtained in the RESIT EXAM surpasses a 'C'.

Article 19

Taking into consideration the provisions of Article 17 of these instructions, if a student repeats any year of study, only the grades of the new courses will be calculated for them, and they are allowed to retake only the courses in which they did not receive a grade of 'D' or higher from the required courses according to the study plan.

Dismissal from the Medical School

Article 20

A) The student will be dismissed from the medical school if he/she is:

1. Unable to pass any academic year from the first five years within two academic years.
2. Unable to pass the sixth year within three academic years.
3. Unable to complete his/her studies within 9 years.
4. Fails in any 4 academic years during his/her period of study.

B) If the student is dismissed from the medical specialization and has been previously dismissed from another specialization at the university, then he/she will be permanently dismissed from the university and will not be allowed to return to it.

Article 21

A) Deferral of Study

1. Study cannot be deferred for a new student in the college or for a transferring student until at least one full academic year has elapsed since starting their specialization.
2. Study cannot be deferred for a student with incomplete course grades until those courses have been completed. If not completed, only the course work grades without the final exam marks will be considered by admission and registration office.
3. If a regular student at the university fails to register for any semester and does not request a study deferral within a maximum of fourteen weeks from the start of either the first or second semester, their study will be deferred for one academic year from that semester. If the deferral period does not exceed two consecutive or separate academic years, and if the student exceeds the deferral period, they will lose their seats at the university. The deferral period may be extended to a maximum of three academic years by decision of the college council.
4. A transferring or failing student may defer one academic semester if there are no academic courses available in their study plan or guidance for their level. This deferred semester will not be counted against the maximum allowable deferral period as outlined in section A.3.
5. The deferral period will not count towards the maximum study duration.
6. An academic year in which a student is dismissed due to disciplinary action will not count toward the maximum study duration or deferral period.
7. If a regular student fails to register for any semester and does not request a deferral for clinical studies within a maximum of ten weeks from the start of their second semester, they will be considered deferred for one academic year starting from the first semester. If the deferral period does not exceed two consecutive or separate academic years, and if the student exceeds the deferral period, they will lose their spot at the university. The deferral period may be extended to a maximum of three academic years by decision of the college council.
8. A student from the first three years who has been deferred for one academic year from the second semester and fails the year can cancel their deferral for the following semester based on their results from the first semester. They will then be considered a repeating student for that year. This semester will not count towards the maximum allowable deferral period as outlined in section A.3.

B) Loss of Seat or Withdrawal:

1) A student who has lost their seat may apply for re-enrolment at the university. If accepted back into the same specialization and study plan, they were previously enrolled in, they will retain their complete academic record (grades, GPA, academic standing, etc.). In this case, the duration of their previous study will be included in the maximum study duration.

2) The student's academic record cannot be used for the purpose of continuing their studies if they have been away from studies for four years or more.

3) If a regular student does not register for the first semester for admission to the college and does not submit a withdrawal request from the university, they are considered to be as objectors from their seat at the university and will have a note by that placed in their record.

C) Withdrawal from the University:

1) If a student wishes to withdraw from the university, they must submit a request. In this case, a note stating "withdrawn from the university" will be recorded in their file, and they will lose their seat. If they wish to re-enrol at the university, the provisions of section B.1 of this article will apply.

2) A student with incomplete course grades cannot withdraw from the university unless they complete their grades; otherwise, only the course work grades without a final grades will be considered by admission and registration department.

Change of Specialization

Article 22

Procedures for changing specialization for students will be carried out according to the approved and implemented criteria at the university.

Article 23

A) Clinical training in the fourth, fifth, and sixth years of the medical college will be monitored through daily clinical training records specific to each department of clinical departments. Students will receive their personal training record before starting their clinical training and are required to return it to the department head upon completion of the clinical training period.

B) Students will be evaluated based on the information recorded in their personal clinical training record and any other required reports.

Requirements for Obtaining a Bachelor's Degree in the Doctor of Medicine

Article 24

A Bachelor's degree in the Doctor of Medicine specialization is awarded upon the completion of the following requirements:

A) Successful completion of all required courses according to the approved study plan.

B) Attainment of a cumulative GPA of at least 2.00.

C) Not exceeding the maximum study duration as stipulated in the regulations.

D) Enrolment as a regular student in the last three academic years at the university, including the graduation year.

General Provisions

Article 25

A) The dean of the college assigns an academic advisor from the faculty members to each student in the college.

B) The dean of the college and the academic advisor are responsible for monitoring the academic progress of the student and verifying their eligibility for graduation, with the advisor informing the student annually.

C) The student expected to graduate must complete a special form provided by the Dean of the College within a maximum of eight weeks from the start of the sixth year, where the dean and the advisor will verify the eligibility for graduation in coordination with the Admission and Registration Unit.

Article 26

The student must obtain a clearance certificate from the university to complete their graduation procedures.

Article 27

The Bachelor's degree bears the date of eligibility.

Article 28

Graduation documents (official certificate, transcript) for university graduates are issued in both English and Arabic.

Article 29

No student may object for not being aware of these regulations or not being informed through university announcements, notices posted on bulletin boards, the university website, or emails regarding these regulations.

Article 30

The University Council will decide on cases not covered in these regulations or any disputes arising from their implementation.

Article 31

The University President, Registrar, College Deans, Department Heads, and Course Instructors are responsible for implementing these regulations and any new decisions and procedures within their respective domains of responsibility. Department heads are responsible for implementing all decisions of the department's council and committees, while the dean of the college or their delegate is responsible for implementing all decisions of the college council and committees.

Study Plan (247 Credits)

Year I

First Semester (18 Credit Hours)

Course Code	Course Title	Credits	Theory	Practical
ENGL 115	English for Medicine I	4	2	6
ENGL116	English for Health Care Professions I	3	2	4
CSC 131	Computer Skills for Medical Students	3	-	3
MED 101	Biostatistics	3	3	1
MED 102	Contemporary Medical Topics	1	1	-
SOCS 151	An Introduction to the Islamic Culture	3	3	-
PHED 152	Health & Physical Education	1	0	3
	Total	**18**	**11**	**17**

Second Semester (18 Credit Hours)

Course Code	Course Title	Credits	Theory	Practical
MED 291	Medical Physics	3	3	-
ENGL 117	English for Medicine II	3	2	4
ENGL118	English for Health Care Professions II	3	2	4
MED 173	Medical Terminology	2	2	-
BIO 103	Biology	3	3	-
BIO 107	Biology Lab.	1	-	3
CHEM 103	Chemistry	3	3	-
	Total	**18**	**15**	**11**

Summer (9 Credit Hours)

Course Code	Course Title	Credits	Theory	Practical
LRSK 142	Communication Skills	3	3	2
CHEM 107	Organic Chemistry	3	3	-
SOCS 152	Faith and Ethics	3	3	-
	Total	**9**	**9**	**2**

Year II

First Semester (16 Credit Hours)

Course Code	Course Title	Credits	Theory	Practical
MED 114	Cell Biology & Tissues	3	2	2
MED 115	Anatomy and Embryology	4	3	2
MED 132	Physiology	3	3	-
MED 202	Biochemistry	3	3	-
MED 284	Health administration informatics, economics and population care	3	3	-
	Total	**16**	**14**	**4**

Second Semester (18 Credit Hours)

Course Code	Course Title	Credits	Theory	Practical
MED 222	Medical Genetics	3	3	-
SOCS 351	The Economic, Political and Social System of Islam	3	3	-
MED 231	Pathology	3	2	3
MED 232	Immunology	3	3	-
MED 251	Pharmacology	3	3	-
MED 265	Microbiology	3	2	3
	Total	**18**	**16**	**6**

Summer (9 Credit Hours)

Course Code	Course Title	Credits	Theory	Practical
MED 282	Neurosciences	6	5	3
XXX	Elective Humanity Course	3	3	-
	Total	**9**	**8**	**3**

Year III

First Semester (18 Credit Hours)

Course Code	Course Title	Credits	Theory	Practical
MED 305	Haemopoietic & Lymphatic System	6	4	6
MED 310	Musculo-Skeletal System	6	4	6
MED 311	Gastro-Intestinal System	6	4	6
	Total	**18**	**16**	**6**

Second Semester (18 Credit Hours)

Course Code	Course Title	Credits	Theory	Practical
MED 321	Endocrine system	4	3	3
MED 352	Urinary and reproductive systems	8	6	6
MED 353	Respiratory system	6	4	6
	Total	**18**	**13**	**15**

Summer Semester (8 Credit Hours)

Course Code	Course Title	Credits	Theory	Practical
MED 364	Cardio-vascular system	6	4	6
MED 370	Professionalism, ethics and legal medicine	2	2	-
	Total	**8**	**6**	**6**

Year IV

First Semester (18 Credit Hours)

Course Code	Course Title	Credits	Clerhship (Weeks)
MED 411	Medical Communications & Clinical skills	5	5
MED 415	Clinical Psychology	3	3
MED 416	Forensic medicine	2	2
MED 417	Dermatology	2	2
MED 418	Anesthesia & ICU	4	4
MED 419	Diagnostic Radiology	2	2
	Total	**18**	**18**

Second Semester (16 Credit Hours)

Course Code	Course Title	Credits	Clerhship (Weeks)
MED 420	General Surgery I	8	8
MED 422	Internal Medicine I	8	8
	Total	**16**	**16**

Summer Semester (8 Credit Hours)

Course Code	Course Title	Credits	Clerhship (Weeks)
MED 430	Community medicine and research project	8	8
	Total	**8**	**8**

Year V

First Semester (16 Credit Hours)

Course Code	Course Title	Credits	Clerhship (Weeks)
MED 507	Pediatrics I	8	8
MED 510	Obstetrics & Gynecology I	8	8
	Total	**16**	**16**

Second Semester (17 Credit Hours)

Course Code	Course Title	Credits	Clerhship (Weeks)
MED 530	Family Medicine	4	4
MED 540	Psychiatry	4	4
MED 550	Ear, Nose & Throat	2	2
MED 553	Orthopedics	2	2
MED 555	Neurology & Neurosurgery	3	3
MED 560	Ophthalmology	2	2
	Total	**17**	**17**

Summer Semester (8 Credit Hours)

Course Code	Course Title	Credits	Clerhship (weeks)
MED 610	General Surgery II	8	8
	Total	**8**	**8**

Year VI

First Semester (16 Credit Hours)

Course Code	Course Title	Credits	Clerhship (Weeks)
MED 620	Internal Medicine II	8	8
MED 630	Pediatrics II	8	8
	Total	**16**	**16**

Second Semester (16 Credit Hours)

Course Code	Course Title	Credits	Clerhship (Weeks)
MED 640	Obstetrics & Gynecology II	8	8
MED 650	Emergency Medicine	4	4
MED XXX	Elective	4	4
	Total	**16**	**16**

Course Description

BIO 103 Biology 3 Credits (3 Lect. & 0 Lab)

The course focuses on the molecular and cellular aspects of life, providing a basis for future courses in biology. The course will investigate the molecular building blocks of life, cellular structure, metabolism, Mendelian genetics of inherited traits, the molecular basis of inheritance and the physiological systems of the human body.

BIO 107 Biology Practical 1 Credit (0 Lect. & 3 Lab)

Co–requisites: BIO 103 Biology

The lab introduces students to techniques necessary to understand cell structure and function and the enzyme action, histology of organs, how to use microscope and other techniques. The lab also introduces the students to mitosis and meiosis and some aspects of human genetics. The lab includes experiments to illustrate chemical and physical characteristics of macromolecules, the structure and composition of plant and animal cells. Respiration, division, and genetics. Study of plant and animal tissues. Discussion and comparing frog's anatomy to human anatomy.

CHEM 103 Chemistry 3 Credits (3 Lect. & 0 Lab)

Pre–requisites: MED 101 Biostatistics

The course focuses the attention on different aspects of Chemistry. It starts with discussing Chemistry: The Study of Change, then Mass Relationships in Chemical Reactions, Reactions in Aqueous Solutions and Gases. In the second part of the course, the periodic table and different types of bonding and interactions, Periodic Relationships among the Elements, Chemical Bonding, and the Physical Properties of Solutions are intensively discussed. Finally, Acids & Bases and Acid-Base Equilibria and their properties are well defined, explained and studied.

CHEM 107 Organic Chemistry 3 Credits (3 Lect. & 0 Lab)

Pre–requisites: CHEM 103 Chemistry

This course deals primarily with the basic principles of organic chemistry in order to understand the structures and reactivity of organic molecules. This course also deals mainly with the constitution and properties of the different classes of organic compounds, with considerable attention to stereochemistry, reaction mechanisms, synthetic organic chemistry and surveys the chemistry of functionalized organic compounds emphasizing mechanisms and multi-step syntheses. Emphasis will be on substitution and elimination reactions, the chemistry of hydrocarbons, alkyl halides, alcohols, carbonyl compounds, and amines.

MED 101 Biostatistics 3 Credits (3 Lect. & 1 Lab)

The course focuses on descriptive and inferential statistics as applied to medical practice. The course starts with descriptive measures and probability concepts and application .The students are trained to draw statistical inferences by two main methods these are: Estimation and Hypothesis testing. Chi-square variants are discussed with relevant clinical examples. Statistical design of experiments is dealt with concentrating on ANOVA and regression analysis. Students are trained to use computer software as Excel and SPSS in solving assigned exercises. The students are provided with necessary software at the beginning of the course to be used during the course in solving practical exercises and in data analysis.

MED 102 Contemporary Medical Topics 1 Credit (1Lect. & 0 Lab)

The course devoted to the study of recent advances in medicine including; regenerative medicine with emphasis on stem cells and their applications in medicine, cloning and therapeutic cloning, assisted reproductive technology as well as gene editing. In addition, the course covers any new discovery in medicine.

MED 114 Cell Biology and Tissues 3 Credits (2 Lect. & 2 Lab)

Pre–requisites: BIO 103 Biology

This course provides fundamental basic knowledge of histology and cell biology. The course provide students with basic knowledge of different aspects of cellular and tissue parts (membrane, cytoskeleton, matrix).It explores the histology and properties of the basic human tissues (Epithelium, connective tissue, Muscle and nervous tissues).

MED 115 Anatomy & Embryology 4 Credits (3 Lect. & 2 Lab)

Pre-requisites: BIO 103 Biology

This is an introductory course in gross anatomy, which provides medical students with knowledge of the anatomy of human body. Lecture presentation begins with an introduction of anatomical terminology and an overview of cellular processes and tissue classification. Students then learn the gross and microscopic anatomy of the following systems: integumentary, skeletal, muscular, nervous, circulatory, respiratory, digestive, urinary, and reproductive. The course also provides an overview of the very early development of human starting from gametogenesis going through the different embryonic stages. This course covers major birth defects in relation to human embryology. The laboratory component of the course generally parallels and reinforces lecture concepts through the use of models, histological slides, skeletal materials and cadaver demonstration.

MED 132 Physiology 3 Credits (3 Lect. & 0 Lab)

Pre–requisites: BIO 103 Biology

This introductory physiology course introduces basics concepts in physiology of human body. The course familiarizes students with basic definitions and principles related to physiology. The course emphasizes the concept of internal environment and homeostasis and the concept of feedback in a biological system. It also helps students to understand body fluid and cellular physiology including membrane ionic basis of excitability, molecular mechanism and mechanics of contraction. The course gives an overview on the physiology and functions of nervous system, cardiovascular system, respiratory system, digestive and renal systems and the endocrine system. It prepare student to understand future disease process and pathophysiology.

MED 173 Medical Terminology 2 Credits (2 Lect. & 0 Lab)

Co–requisites: ENGL 116 English Language for Medical Students II

The study of the principles of medical word building to help the student develop the extensive medical vocabulary used in health care occupations. Students receive a thorough grounding in basic medical terminology through a study of root words, prefixes and suffixes. The study focuses on correct pronunciation, spelling and use of medical terms of body systems. For each body system, broad coverage of anatomy, physiology, pathology, diseases, diagnostic procedures, treatment procedures, and pharmacology terminology is provided. The course emphasizes both terms built from Latin and Greek word parts, and modern English terms, to assist students to develop a full working word part vocabulary they can use to interpret new terms.

MED 202 Biochemistry 3 Credits (3 Lect. & 0 Lab)

Pre–requisites: BIO 104 Biology, CHEM 107 Organic Chemistry

This course deals with structure and properties of biomolecules, such as amino acids, proteins, carbohydrates, lipids, and nucleic acids. The focus of this course will be on the relationship between protein structure and its biological function, generation and storage of metabolic energy, main metabolic pathways and their key steps. In addition, the role of phospholipids in determining the properties of biological membranes and their function will be discussed. The principal objective of the course is for students to acquire knowledge and understanding of current concepts in the subject of the course and to develop critical thinking skills.

MED 222 Genetics of Diseases 3 credits (3 Lect. & 0 Lab)

Pre–requisites: MED 202 Biochemistry

This course is designed to understand the basic principles of molecular genetics and diseases. Emphasis will be given to those principles that have application in medical practice. The structure of DNA and RNA as genetic material, DNA organization and its replication, mutation and repair in both prokaryotes and eukaryotes will be covered. Furthermore, gene expression will also be discussed. Finally, the course will cover some aspects of cancer genetics, cytogenetics and molecular biology techniques, and diagnosis of genetic diseases.

MED 231 Pathology 3 credits (2 Lect. & 3 Lab)

Pre–requisites: MED 114 Cell Biology and Tissues & MED 115 Anatomy & Embryology

The course allows students to learn basic concept of the various disease processes in the body as well the basic molecular, cellular and reactions to various injurious agents. Cell injury including: adaptations, necrosis & apoptosis. Pathology of Inflammation including causes and manifestations and hemodynamic are also discussed. The course also emphasizes neoplasia including classification, epidemiology, and characteristics of benign and malignant tumors. The major grading and staging systems of neoplasms will be covered in detail. Knowledge of etiology of tumors and its consequences on health are also covered.

MED 232 Immunology 3 credits (3 Lect. & 0 Lab)

Pre–requisites: MED 115 Cell Biology and Tissues & MED 202 Biochemistry

This introductory course in medical immunology includes a series of lectures stressing basic concepts in immunology. The purpose of the course is to provide a basic knowledge of the immune response and its involvement in health and disease. Topic covered in this course are innate immunity, acquired immune response, cells and organs of the immune system, immunoglobulin structure and genetics, antigen-antibody reactions, the major histocompatibility complex and antigen presentation. This course also explores T cell, B cell and natural killer cells functions. The T cell receptors genetics, structure, selection apoptosis and adhesion molecules, phagocytic cell function are explored. Immune responses to infections, tumors, transplantation autoimmune diseases, allergies, and immune deficiency diseases are also covered.

MED 251 Pharmacology 3 credits (3 Lect. & 0 Lab)

Pre–requisites: MED 202 Biochemistry

Pharmacology in its broadest sense is the study of chemicals on biologic system. This course is designed to provide the medical student with basic knowledge in pharmacology. In this course emphasis is placed on drug groups and prototypes drugs. A brief introduction on the basic principles of pharmacokinetics and pharmacodynamics are discussed in relation to different drug groups. Mechanism of action and drug adjustment according to drug metabolism are also emphasized.

MED 265 Microbiology 3 credits (2 Lect. & 3 Lab)

Pre–requisites: MED 202 Biochemistry

This introductory course covers basic principles of bacteriology, virology, mycology, immunology and parasitology. It also covers basic concepts of infection control in hospitals, sterilization and disinfection, diagnosis of infectious diseases including specimen collection for the clinical microbiology laboratory and epidemiology. The laboratory part covers basic techniques in microbiology.

MED 282 Neuroscience 6 credits (5 Lect. & 3 Lab)

Pre–requisites: MED 232 Immunology, MED 251Pharmacology & MED 265 Microbiology

The course is divided into two parts. The first part of the course integrates the basic sciences into a study of neuroscience and behavior in both health and disease states. Each of the basic science topics is incorporated into an integrated body of knowledge covering neuroanatomy, neurophysiology, neurological correlation, microbiology, neuropharmacology, neuropathology,

human behavior and biochemistry. It provides basic knowledge and understanding of the structure, function of the nervous system, biochemical basis of human behavior, as well as the pathological basis of neurological and mental disorders. Fundamental principles of anatomy, physiology, pharmacology, pathology, microbiology and human behavior will be applied to pathological situations to distinguish the clinical basis for central nervous system disorders.

The second part of the course emphasizes anatomy, physiology, pharmacology, microbiology and pathology of the peripheral nervous system including peripheral nerves, nerve plexuses and peripheral nerve branches cranial nerves and special senses. To enhance integration of basic and clinical sciences as well as and self-directed learning, common clinical disorders related to this system are also explored using case based small group discussions and seminars.

MED 284 Health Administration Informatics, Economics and Population Care

3 Credits (3 Lect. & 0 Lab)

This course explores health administration informatics as well as current trends for health care delivery and economy. The course provides an overview of the management of data and information resources critical to effective and efficient healthcare delivery such as insuring accurate and complete data; ensuring quality of data; analyzing data for decision support, research, public policy, and the protection of patient privacy and security. The course also address population care issues including caregiving responsibilities, long-term diseases, disabilities, and addiction. Cultural and social norms, and local factors that affects the delivery of health services as well as economic challenges in health care system are addressed. Economic principles used to analyze the behavior of patients, healthcare providers, health insurers and policymakers will also be discussed.

MED 291 Medical Physics 3 credits (3 Lect. & 0 Lab)

Pre–requisites: MED 101 Biostatistics

This course introduces fundamental concepts in mechanical physics to medical students, covering Newton's laws, elasticity, temperature scales, and fluid mechanics. It delves into practical applications, including the measurement of blood pressure and the comprehension of fluid behaviors. The study then advances to encompass sound waves, principles of light and geometric optics, exploring mirrors and lenses. The course connects these topics with applications such as aberrations, the human eye, and imaging techniques. In the broader context of physical phenomena, students investigate radioactivity, half-life, and ionizing radiation, gaining practical insights into their interaction with matter and applications in medicine.

MED 305 Hematopoietic and Lymphoid System 6 Credit (4 Lect. & 6 Lab)

Pre–requisites: MED 231 Pathology, MED232 Immunology & MED 265 Microbiology

This integrated multidisciplinary module gives a comprehensive coverage of anatomy and physiology, and pathology of the hematopoietic and lymphatic system. The basic classification of anemia's, leukemia’s and bleeding disorder and other common hematological diseases and their relevant diagnostic methods and natural history are discussed. All relevant pharmacological, biochemical, microbiological, and public health aspects are handled in relation to specific diseases. Teaching methods include lectures, labs, seminars, and small group discussion of clinically oriented problems to enhance self-directed learning.

MED 310 Musculoskeletal and Integumentary Systems 6 Credit (4 Lect. & 6 Lab)

Pre–requisites: MED 231 Pathology, MED232 Immunology & MED 265 Microbiology

This course is an interdisciplinary integrated module of musculoskeletal system. Basic sciences of anatomy, biochemistry microbiology, pathology, pharmacology, and physiology of the musculoskeletal system are correlated with clinical disorder of this system. The goal of this integrated course is to provide the medical student with comprehensive knowledge about bones, joints muscles, tendons, ligaments, skin and associated soft tissues related to clinical manifestations of diseases. The teaching methods include lecture labs as well as seminars and small group discussions of clinical oriented problems to enhance self-directed learning.

MED 311 Gastro-Intestinal Tract (GIT) System 6 Credit (4 Lect. & 6 Lab)

Pre–requisites: MED 231 Pathology, MED232 Immunology & MED 265 Microbiology

Interdisciplinary integrative course which explores fundamental concepts of biochemistry, anatomy, histology, physiology, nutrition and public health problems, pathology, pharmacology, and microbiology as they relate to issues and common diseases of Gastrointestinal and Hepatobiliary system. Pharmacology and therapeutic management of common GI problems are also explored. Teaching methods include lectures and labs. The lectures cover all the aspects of gastrointestinal system. The practical part of the course gives emphasize the anatomy of GIT and pathology of GIT. In addition, small group discussions of common clinical problems are part of the teaching strategy of this module to enhance integration of basic sciences and clinical knowledge and students' self-directed learning.

MED 321 Endocrine System (E.S.) 4 Credit (3 Lect. & 3 Lab)

Pre–requisites: MED 231 Pathology, MED232 Immunology & MED 265 Microbiology

This interdisciplinary integrated course of endocrine system gives comprehensive coverage of anatomy, microbiology, pathology, pharmacology, physiology and biochemistry. The course materials are correlated with clinical aspect of clinical endocrine disorders. Essential background for understanding of clinical medicine related to endocrine regulation and homeostasis are emphasized. The teaching methods include lectures, labs as well as seminars and small group discussions of clinical oriented problems to enhance self-directed learning.

MED 352 Renal, Urinary and Reproductive Systems 8 Credit (6 Lect. & 6 Lab)

Pre–requisites: MED 231 Pathology, MED232 Immunology & MED 265 Microbiology

This course is a multidisciplinary integrated course deals with the gross morphology, vasculature, lymphatic drainage and innervation of different organs forming renal, urinary and reproductive systems. The course deals with the gross morphology, vasculature, lymphatic drainage and innervation of different organs forming renal, urinary and reproductive systems. Various functions, normal development and congenital anomalies of these systems will be covered. In addition, normal and pathological microscopic appearance of different components of the systems will be discussed. Biochemical and genetic aspects, microorganisms that infect the systems as well as drugs that affect this system will be conferred.

MED 353 Respiratory System 6 Credit (4 Lect. & 6 Lab)

Pre–requisites: MED 231 Pathology, MED232 Immunology & MED 265 Microbiology

This multidisciplinary integrative respiratory system module provides comprehensive and integrated coverage of anatomy, physiology, histology and embryology of the respiratory system. Microbiology, biochemistry, and pharmacology relating to the system are discussed. Pathology of the upper and lower respiratory system is presented along with clinical presentations of diagnostic and treatment modalities. Teaching methods include lectures, labs, small group discussion, and clinically oriented seminars to enhance self-directed learning.

MED 364 Cardiovascular System (CVS) 6 Credit (4 Lect. & 6 Lab)

Pre–requisites: MED 231 Pathology, MED232 Immunology & MED 265 Microbiology

This system-based integrated module gives a comprehensive overview of the cardiovascular system. The basic science topics are incorporated into an integrated body of knowledge covering biochemistry, physiology, pathology, pharmacology, anatomy, histology and microbiology of the cardiovascular system. Development aspects of the heart as well as congenital disorders of the heart are explored. Pathology, pathophysiology and pharmacology of the common disorder of the CVS including hypertension, arrhythmias and ischemic heart disease are emphasized.

MED 370 Professionalism, Ethics and Legal Medicine 2 Credits (2 Lect. & 0 Lab)

Pre–requisites: Fourth year standing

This course covers legal relationships of physicians and patients, contractual agreements, professional liability, malpractice, medical practice acts, informed consent, and bioethical issues. Emphasis is placed on legal terms, professional attitudes, and the principles and basic concepts of ethics and laws involved in providing medical services. The course will include careful examination of the philosophical theories of ethics that have guided medical ethics since its inception. Upon completion, students should be able to meet the legal and ethical responsibilities of a multi-skilled health professional.

MED 411 Medical Clinical and Communications Skills 5 Credits: 5 weeks clerkship

Pre–requisites: Completion of all system courses

This course is offered to medical students at the beginning of the 4th year this course introduces medical students to basic clinical knowledge, skills and attitudes that prepare them to start clinical rotation. The course provides the first chance of contact between medical students and simulated or real patients, and will start the construction of proper doctor-patient relationship. It gives students needed competencies to obtain medical history and to perform basic physical examination. Learning in Communication and Clinical Skills is designed to assist the student in developing fundamental clinical skills upon which they will build throughout their professional lives. Interviewing, communication skills, basic physical examination skills, and foundations of clinical reasoning are the focus of the course.

MED 415 Clinical Psychology 3 Credits: 3 weeks clerkship

Pre–requisites: Completion of all system courses

This course on behavioral science introduces students to psychosocial aspects of medical practice and offers them an overview of clinical psychiatry. Psychiatry has as its allied disciplines sociology and psychology. Behavioral science includes behavioral biology, including biochemical, physiological and pharmacological correlates of behavior; individual behavior including emotions, life cycle, motivation, personality and its psychopathology; and interpersonal and social behavior. Most lecturers are clinicians. It is, therefore, to be expected that the material covered in this course will be clinically relevant. In view of the limited time available, not every topic can be covered. Although some lecturers distribute lecture notes, others may not. You are welcome to take notes in classes. The course is organized into many sections that cover the human health behavior from the biological, psychological and social perspectives.

MED 416 Forensic Medicine 2 Credits: 2 weeks clerkship

Pre–requisites: Completion of all system courses

This course introduces students to forensic terminology with emphasis on the understanding of the underlying pathology of traumatic and sudden, unexpected deaths encountered. The course deals with medico-legal investigation of death and injury due to natural causes, accidents, and violence. It covers analysis/investigation of transportation injuries, of homicides, suicides due to various causes, and sexual crimes and methods for identification and guidelines for quality control assurance.

MED 417 Dermatology 2 Credits: 2 weeks clerkship

Pre–requisites: Completion of all system courses

This is a 2-weeks full time rotation in Dermatology. During this course, medical students are introduced to general Dermatology with emphasis on performing dermatological history and examination using dermatological descriptive terms. In addition, students are exposed to various clinical cases during clinics at hospital and dermatology clinics. Common topics are also emphasized on by seminar discussions done on daily basis during the rotation.

MED 418 Anesthesia and Intensive Care 4 Credits: 4 weeks clerkship

Pre–requisites: Completion of all system courses

This 4-week course is offered to the fourth year medical students. During this clinical rotation students will spend their morning hours in the operating theater learning basic principles of anesthesia including airway management, fluid management, induction and maintenance of anesthesia, patient's monitoring, and recovery. Students will be given daily seminars that cover important aspects of anesthesia and intensive care.

MED 419 Diagnostic Radiology 2 Credits: 2 weeks clerkship

Pre–requisites: Completion of all system courses

This clinical rotation in radiology is offered to fourth year medical students. The goal of this course is to present a basic introduction of the common radiological exams procedures and techniques as well as familiarize medical students with indications and contraindications of different radiological exams. The course also emphasizes basic radiological anatomy and train medical students to identify and diagnosis common and emergency pathological conditions using different radiological modalities.

MED 420 General Surgery I 8 Credits: 8 weeks clerkship

Pre–requisites: Completion of all system courses

The eight-week surgical rotation is an intense clinical experience that introduces students to the basic principles of surgery. Students rotate on the Surgical Teams at various hospitals that are affiliated to the medical school in the university. Six weeks of general surgery and two-week blocks of surgical subspecialties make up the rotation. During the rotations, students learn pre-, peri-, and post-operative evaluation and management of surgical diseases. Time is spent on the wards, in outpatient clinics, and in the operating room.

MED 422 Internal Medicine I 8 Credits: 8 weeks clerkship

Pre–requisites: Completion of all system courses

This course introduces general internal medicine principles to the 4th year medical students where students will have exposure to many common medical conditions. It is a shared course among the faculty members of the department and administered at affiliated hospitals. During the rotations, students expand their knowledge of adult health and wellness, preventative, primary, secondary and tertiary care for cardiovascular system diseases, renal and urinary tract systems diseases, respiratory system disorder, endocrine and metabolism, gastroenterology, hematology, rheumatology and infectious diseases. They learn about the treatment of acute and chronic medical conditions and gain the ability to apply this knowledge in the clinical setting.

MED 430 Community Medicine and Research Project 8 Credits: 8 weeks clerkship

Pre–requisites: Completion of all system courses

The course is divided into two equal parts, each for 4 weeks during the summer semester of the fourth year. The first part is the case study part during which simulated case studies are presented to students for discussion and comments. The second 4 weeks are devoted to field practice in community medicine. Field practice demonstration areas are based in selected health centers in and around Tabuk. Students practice data collection, data analysis and data presentation in the form of tables and figures. The report that each individual student submits follows the 'standard" protocol of research writing.

MED 507 Pediatrics I 8 Credits: 8 weeks clerkship

Pre–requisites: Completion of all system courses

This course gives medical students competences relevant to medical history taking of common pediatric disorders. Skills related to performing physical examination on infant, children and decedents are also emphasized. Principle of preventive medicine such as vaccination and nutrition are covered in this course. During the 8 weeks rotation, students are directly supervised by clinical instructors on the common pediatric diseases. This course also covers normal developmental and

disorders related to behavioral aspects of children at different age group.

MED 510 Obstetrics and Gynecology I 8 Credits: 8 weeks clerkship

Pre–requisites: Completion of all system courses

This 8-week course provides the students with the basic knowledge of common obstetric and gynecology diseases. It also focuses on providing the students with the basic skills of history taking and skills of conducting relevant physical examinations. At the end of this course students are expected to generate appropriate assessment of common obstetrics and gynecology disease presentations including generating differential diagnosis and able to utilize laboratory and imaging facilities to reach appropriate diagnosis. Management of common disorders is discussed. Preventive medicine related to health during pregnancy and birth control is also emphasized.

MED 530 Family Medicine and Primary Health Care 4 Credits: 4 weeks clerkship

Pre–requisites: Completion of all system courses

Medical students spend this 4 week family medicine rotation in university health center and other affiliated primary health care centers in Irbid area. Students during this rotation are exposed to different health problems commonly seen in these primary health care centers. Their role includes communication with patients, physical examination and active participation in management plan. Lectures and seminars are conducted on common disease as well as on disease prevention and health promotion in the context of national health system.

MED 540 Psychiatry 4 Credits: 4 weeks clerkship

Pre–requisites: Completion of all system courses

This course is a four weeks clinically rotation in psychiatry. The rotation emphasizes principles and methods of psychiatric assessment, principles of psychiatric diagnosis, recognition of key signs and symptoms in psychiatry. Diagnosis of the most common psychiatric disorders and understanding the general treatment and management of these disorders are also emphasized.

MED 550 Ear, Nose and Throat (ENT) 2 Credits: 2 weeks clerkship

Pre–requisites: Completion of all system courses

This is an introductory two weeks clinical rotation offered to fifth year medical students. During the rotation, common diseases of ear nasophryanx oral cavity are emphasized. Students see patients in the clinic with the attending staff and gain preliminary experience in performing otoscopic examinations of the ears, examinations of the nose, nasopharynx, and oral cavity and larynx. Students will be familiar with the diagnosis and management of the common presenting problems in otolaryngology as well as emergency Otolaryngology cases. Skills necessary to take relevant medical history and examination are emphasized.

MED 553 Orthopedics 2 Credits: 2 weeks clerkship

Pre–requisites: Completion of all system courses

This is a two week clinical rotation for fifth year medical students during which the students will be introduced to general orthopedic disorders. Students at the end of the course are expected to have covered all aspects regarding assessing fractures, general management and complications of fractures, evaluation and assessment of orthopedic disorders affecting bone and joints are also covered. Students are trained to obtain relevant history and to perform physical examination of patients with common musculoskeletal disorders. General management of common orthopedic problems is also covered. Throughout the course, students will be involved in the daily morning report, clinical rounds, outpatient clinics and interactive seminars.

MED 555 Neurology and Neurosurgery 3 Credits: 3 weeks clerkship

Pre–requisites: Completion of all system courses

This 3-week course is given as part of the clinical rotations for 5th year medical students. It is an integrated course that covers common neurological and neurosurgical problems. The course also emphasizes fundamentals of the neurological history taking, neurological examination,

pathophysiology and management of common neurological and neurosurgical diseases. Care in areas of head and spine injuries, congenital anomalies, brain tumors, spinal diseases, stroke, demylinating diseases, and neuromuscular diseases are also covered.

MED 560 Ophthalmology 2 Credits: 2 weeks clerkship

Pre–requisites: Completion of all system courses

Ophthalmology course is a two weeks rotation for 5th year medical students. During this course the student attends daily clinical round in the ward. They participate in seeing patients in the clinics. Seminars on common ophthalmology disease are given in the afternoon. By the end of the course, the student should be familiar with basics in ophthalmology and aware of the common ophthalmic disorders and conditions. Throughout the course, students will be involved in the clinical rounds and consults, outpatient clinics and interactive seminars.

MED 610 General Surgery II 8 Credits: 8 weeks clerkship

Pre–requisites: MED 412 General Surgery I

An eight-week General Surgery rotation is a clinical experience that introduces students to basic principles of surgery and related problems. Its curriculum is defined by learning objectives and encompasses inpatient-hospital and outpatient-office experiences. During the clerkship, students evaluate and follow patients. 6 weeks of general surgery and two-week blocks of surgical subspecialties (Urology and Neurosurgery) make up the rotation. Functioning as members of the patient-care team, the team pre- and post-operative evaluation and management, and visiting the operating theaters to see some surgical procedures. Daily rounds and faculty/preceptor interactions give students the opportunity to discuss patient problems in detail. Faculty members provide students with regular feedback, advice, and direction. Throughout the course, students will be involved in the daily morning report, clinical rounds, outpatient clinics and interactive seminars.

MED 620 Internal Medicine II 8 Credits: 8 weeks clerkship

Pre–requisites: MED 422 Internal Medicine I

This is a general internal medicine for final year medical students during which will advance their skills in the field of internal medicine. Students are expected to cover core medical problems through daily bed side teaching rounds and attending specialty outpatient clinics. Throughout the course students will have interactive seminars that cover a wide variety of common and important medical problems. Throughout the course, students will be involved in the daily morning report, clinical rounds, outpatient clinics, interactive seminars, and department teaching activities.

MED 630 Pediatrics II 8 Credits: 8 weeks clerkship

Pre–requisites: MED 507 Pediatrics I

This is an eight weeks rotation for 5th year medical students. During the rotation, students are exposed to different settings through rotating with different sub specialist in hospitals. This includes both in patients and out patients encounters. This rotation is to emphasize active student's involvement of students in patient care and allow them to follow their own patients with continuity. Students are also encouraged to act at the level of interns in preparation for graduation requirement. Throughout the course, students will be involved in the daily morning report, clinical rounds, outpatient clinics and interactive seminars.

MED 640 Obstetrics and Gynecology II 8 Credits: 8 weeks clerkship

Pre–requisites: MED 510 Obstetrics and Gynecology I

This course is intended to expand on the knowledge acquired in the fifth year, with emphasis on the practical aspects of obstetrics and gynecology. During the rotation, students are exposed to different settings through rotating with different sub specialist in hospitals. During this course, students are expected to learn more about diagnosis and management of common obstetric and gynecology diseases and to deal with common emergency situation in this field. Throughout the course, students will be involved in the daily morning report, clinical rounds, outpatient clinics and interactive seminars.

MED 650 Emergency Medicine 4 Credits: 4 weeks clerkship

Pre–requisites: MED 510 Obstetrics and Gynecology I

This course is a four-week rotation in an affiliated hospital emergency room designed to further develop the concepts of diagnosis and management acquired during the pre-clinical course-work and to develop decision-making and cognitive skills related to patient care in an emergency room. This course will also provide the student a chance to develop additional clinical psychomotor skills by performing routine basic procedures in a supervised setting. In addition, this course may include experiences such as surgical assistance, labor and delivery, hospital staff and committee meetings, hospital emergency room calls, community and public health functions. Students are encouraged to observe, evaluate, and participate in the discussions and medical care of patients, at the discretion and under the immediate supervision of an assigned physician through the combined coordination and direction of the on-site supervising physician and the course coordinator.

FACULTY LIST

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Abdelrahman, Mustafa; Instructor,
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Abdallah, Dana; Assistant Professor,
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Ramadan, Ali; Assistant Professor,
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