



Lebanese International University

University Catalogue

2022 - 2023



Lebanese International University

LIU - University Catalogue

2018-2019

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Notice

LIU University Catalogue is a source of information for students, new applicants, and faculties and staff on student services, resources, academic rules and regulations, schools, and educational programs, etc.

LIU reserve the right to update the information contained in this catalogue with or without prior notice.

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1 The University

1.1 About LIU

The Lebanese International University (*LIU*) is a private, independent institution of higher education governed by a private, autonomous Board of Trustees. The University was established in 2001 under the name of Bekaa University in accordance with decree 5294 on April 9, 2001. The University is recognized by the Lebanese State as a private Higher Education Institution in Lebanon, according to the law of Higher Education Organizations in Lebanon. The University name was later changed from Bekaa University to the Lebanese International University, in accordance with decree 14592 on June 14, 2005, with its first two campuses in Al-Khyara, in the western Bekaa valley and the capital Beirut, for the founders had a vision of making the university a true national university with a presence in all six administrative district which so comprise Lebanon. As career-oriented institution with the mission of creating access to higher education for first generation students who otherwise would not have the opportunity to join the professional workforce. With a commitment to democratize higher education and empowerment, the University since 2003 and until 2013 established seven additional campuses in: Nabatieh, Tripoli, Mount Lebanon, Tyre, Rayak, and Halba.

As it has since its beginning LIU is also elevating the university's regional and international prominence as extensive development and significant academic achievements took place under the leadership of Mr. Abdul Rahim Mourad, founder President since 2001 to present. Undergirded by its own institutional mission of taking the University to where the needs are. In continuity with its tradition and history the University will continue to be a pioneering institution notable for its innovative and creative response to the changes in educational needs be it in Lebanon, the Arab World, Africa and beyond.

One University, Many Constituents

With the slogan, "**Education for All**" which has been endorsed since inception and through the troika of Quality Education, Affordability, and Accessibility, LIU is a career-oriented institution whose overarching purpose is to democratize and empower learners in higher education. The University has seen significant change over the years since its Founding. In order to bring the University and the **nine campuses** together more fully as one community, several major new initiatives are at work on key campus improvements. The aim of which is to move LIU forward and make our beautiful campuses a more attractive, compelling and welcoming place for our students. At each of the campuses, the Campus Council meets, works collaboratively on policies and procedures, and seeks to disseminate critical information to all areas of the campus so as to create an environment conducive to excellence.

Schools, Academic Program and Degrees:

LIU has five schools:

1. School of Business
2. School of Engineering
3. School of Arts and Science
4. School of Education
5. School of Pharmacy

The University is currently offering about 63 different programs or majors leading to Bachelors, Master and Doctoral Degrees (PharmD).

1.2 Mission Vision, Core Values

1.2.1 University Vision

The Lebanese International University will be a leading transnational University known for an outstanding student-centered, teaching-focused learning experience and academic research excellence, which empower its graduates for successful engagement in career and life opportunities, underpinned by outreach to alumni, enterprise and the professions.

1.2.2 University Mission

LIU's mission is to provide affordable and accessible quality higher education, guide and cultivate the knowledge and skills of its students to be independent learners, able to assume responsibilities as citizens to positively impact local, regional, and global communities. LIU endeavors to promote student success through processes of curricula renewal and research for innovative outcomes.

Since its creation in 2001, *LIU* has claimed, as part of its mission, the right to play a role in providing the highest possible quality higher education at the lowest possible cost in order to meet the needs of individuals, communities and enterprises both in and beyond Lebanon.

The idea that learning can be a joyful experience stands at the very heart of the Lebanese International University. LIU is proud to offer new perspectives today's students need to understand, engage with, and most importantly make a difference in the world around them. With relatively modest class sizes, and the assurance of direct access to highly talented, dedicated faculty members, our students benefit from a learning environment similar to that found at many liberal universities.

1.2.3 University Core Values

While our vision and mission show where we want to go, our values guide us on the way. They cut across organizational boundaries, bind us culturally, and permeate our strategic and tactical initiatives. They are the defining traits of the LIU community.

LIU is committed to the following set of core values: Inclusiveness and Diversity; Accessibility and Affordability; Responsibility to Learners; Excellence in Teaching, Research and Scholarship; Integrity and Accountability; Freedom and Discovery.

These six core values provide the foundation for how we conduct ourselves, accomplish our work, and build our reputation as a university. They reflect a university with a strong sense of purpose, confidence, and a desire to succeed. We believe our values are what make LIU a great place to work and study at.

The values also reflect the traits we as faculty, staff, students and alumni hold dear. They mold the character of our culture. Each member of the LIU community plays a vital role in nurturing these values, using them to guide daily working lives and in the way, we forge relationships with each other, our students, industry partners and stakeholders. This is essential if we are to fulfill our strategic ambitions and if the university community is to provide an environment that enables our students, faculty and staff to succeed.

1. Inclusiveness and Diversity

LIU promotes inclusive and diverse community and strives for building a workplace culture where all can develop their skills and talents irrespective of gender, race, ethnicity, disabilities, social class, heritage, religion, family status, age and perspectives.

2. Accessibility and Affordability

LIU is committed to provide students equal, affordable and accessible quality education opportunities.

3. Responsibility to Learners

LIU staff are committed to continually support students to become responsible for their own learning at university and in life.

4. Excellence in Teaching, Research and Scholarship

LIU strives for excellence in all activities to create thriving communities that transform the prospects of all engaged with the university.

5. Integrity and Accountability

LIU appeals to stakeholders to act honestly, ethically and transparently in all activities, foster a climate of mutual trust and respect given the participatory nature and personal accountability of the educational provision.

6. Freedom and Discovery

LIU upholds academic freedom to all stakeholders, foster creativity and innovation for the benefit of community and the environment.

The university recognizes the people of LIU as the principal enablers of the transformation from good to excellent and will create opportunities to develop and reward excellence. It has articulated the attributes for graduates and staff to align with LIU values and goals.

1.3 Campuses

Bekaa Campus

The Bekaa Campus is the 'mother' of LIU's many Lebanon based ones. It is distributed over an area of 400,000 square meters. The two main buildings include 10 auditoriums each with a capacity of over 150 seats, and a library housing a wide variety of books and periodicals as well as wireless internet access. In addition, there are computer labs equipped with the latest educational software as well as Internet connection, teaching science and engineering laboratories, state-of-the-art pharmacy dispensing and compounding laboratories, and a research laboratory with HPLC and GC capabilities. The Campus also has a main cafeteria with more than 500 seating capacity, several shops and eateries, dormitories for both female and male students, and a wide range of recreational facilities including an Olympic-size pool, a football stadium, and several green fields and parking areas.

Beirut Campus

Founded in 2002, the Beirut Campus is located not far from the Beirut Central District and consists of seven buildings. It has a main library with print and electronic collections that are developed and enriched on a regular basis to support the academic and research program of LIU. In addition, there is a library for Pharmacy and a research laboratory with HPLC and GC capabilities, and several well-equipped teaching laboratories including a Pharmacy Dispensing and Compounding labs designed to prepare students to develop critical thinking and problem-solving abilities as well as understand and interpret generated laboratory data. Secure and reliable wireless connection is available throughout the campus precincts. The Campus also has cafeterias; large auditoriums, underground parking, and housing for female and male students in University owned apartment buildings adjacent to campus.

Saida Campus

The Saida Campus -the second largest in terms of enrollment among LIU campuses- is located in Saida, third-largest city in Lebanon, The Campus is situated near the Mediterranean coast, and it is about 40 km from north of Tyre and at a distance of 40 km (25 mi) south of the capital Beirut. In ancient times Saida was known as Sidon- residence of the son of Canaan and the grandson of Noah, it is around 300 m from the sea and 2 km from the city center (Nejmeh Square). It is surrounded by fruit fields, especially bananas and citrus. It is also near a fishery that sells fresh fish by bidding every morning and is next to the famous sea Castle which the Crusaders. The campus is in the center of many educational facilities ranging from public elementary schools to public and private universities.

Tripoli Campus

Communiversality is not a word you would find in the dictionary; rather it is derived from the Reality of LIU Tripoli Campus. It is a partnership between the University's Tripoli Campus, and the various elements that constitute the North community. The vital educational and employment services this Campus offers to the community made it a pioneer in the area. LIU in general and the Tripoli campus in particular pride itself on establishing the idea of a leader in students and instructors' diversity.

Communiversality; A concept the Tripoli campus created, and really lives up to it. In its serene and tranquil setting, overlooking the cedars mountain of Lebanon and the City of Tripoli, in this widely open bell view of this urban area, where reality of learning takes over the dreams. The true diversity of the Lebanese textile interacts together in the most harmonious educational setting available. Since its inception in 2006, Tripoli Campus has attracted a reasonable number of students seeking quality education offered in a professionally equipped and administrated setting.

Nabatieh Campus

Hometown to several learned men of international renown – like the theologian Sheikh Aref al Zein and the scientist Hasan Kamel al Sabbah – Nabatieh is the most important city of the Jabal Amel area and the chief center of both the Mohafaza (Governorate) and the Caza (District). Sitting at 400 m above sea level and some 70 km south of Beirut, and with 120,000 inhabitants in the city proper and more than 250,000 people in the

surrounding villages, Nabatieh enjoys an important economic and cultural position in South Lebanon. The city has branches of several banks, hospitals, restaurants and cultural centers of interest to tourists. The historic Beaufort Castle that lies a few kilometers to the south-east of the city is a picturesque site that tells a thousand and one stories.

In this environ, the LIU Nabatieh Campus stands as an educational monument that added exceptional value to the city's cultural spectrum. The campus was launched in fall 2006 with some eighty students enrolled in Business, Computer Sciences and Information Technology. Today, the campus is home to over a thousand students majoring in more than 40 different specialties.

The artistic buildings imbued with modern Lebanese touch house state-of-the-art computer, technology, biomedical, chemical, nutrition and food sciences, and engineering laboratories, Arts and Design studios, besides the roomy classes and exam halls. Students' facilities are not only limited to an ever-growing shelf and e-library, but also encapsulate a warm atmosphere cafeteria and a set of sports courts and a green field. The latter is frequently sought by local teams and sports organizations for hosting tournament and friendly games. These sports facilities helped LIU Nabatieh varsity teams win the lion's share of trophies in competed tournaments.

Mount Lebanon Campus

The Lebanese International University Mount-Lebanon campus spreads over 6000 square meters of land. Located in the eastern suburb of Beirut, It lies in the center of a residential commercial area which makes most of the malls, shopping centers. Also, the industrial quarter lies within 10 minutes of walking distance. At the same time, the Mediterranean seashore is less than a mile away.

Four buildings designated for the schools of Engineering, Arts and Sciences, Education and Business extend along green areas and recreational facilities including community sports, a basketball court, a volleyball court and a large parking area. The campus also houses a cafeteria, computer labs equipped with the latest software, and hi-tech engineering and science laboratories properly equipped to help students develop their practical and analytical skills, and an instructional resource center that encompasses ample variety of books, periodicals and article as well as internet access.

Tyre Campus

At the North Entrance of Sour- Alabasiyeh Road Junction- LIU Tyre Campus stands. LIU is the first university in history of Sour region that includes more than 40 majors. Hundreds of students are no longer enforced to leave their remote villages to far cities as Saida and Beirut.

Sour juts out from the coast of the Mediterranean and is located 83 km South of Beirut. Sour is the fourth largest city of Lebanon. It was founded around 2750 BC. The introduction of the alphabet into Greece was attributed to Cadmus of Sour, and it was Europa, the sister of Cadmus, who gave her name to the continent. Sour's Roman Hippodrome was added to UNESCO's list of World Heritage Sites in 1979.

Within a very quiet environment and at less than 1 km to the east of the sea, the Campus's three blocks occupy about 6000 m². Surrounded by wide green areas, the Campus is located in a vital region and is feasibly reachable by students from tens of villages to the South, East and North of Sour.

Rayak Campus

With Its inaugural 2011-12 Academic Year the Campus welcomed its new students, located in the heart of the Bekaa it serves a populated area that extends from Zahle to Baalbek.

The campus is surrounded by fabulous views, Sannin Mountain to the west and the eastern mountain chain to the east. Being at that point, transportation is a no-worry issue at all, the campus is just off the Zahle-Baalbek highway. As for the campus itself, it is equipped with all the facilities, Rooms, auditoriums and labs which make it truly the best educational environment in the area.

Halba Campus

LIU Halba campus was inaugurated in October 2013 in the city of Halba, Northern Lebanon. The Physical facilities initially consisted of one building containing normal 15 classes, 2 auditoriums, 1 computer lab (1), a cafeteria and students' lounge as well as administrative offices. The number of students in the first year 171 students enrolled in various degree programs offered by the schools of Arts and Sciences, Engineering, Education and Business.

By second year, the number of students exceeded 441 students, and a new campus block was added to incorporate the director's office, registrar, student affairs, accounting, IT, assistant dean offices, and instructors' lounges. For teaching and learning some 15 normal classes, sciences labs as well as a library, became available. For recreational purpose space was designated for a basketball and a football playground and many tournaments were and continue to be undertaken.

Campus growth was faster than anticipated and further developments and expansion was warranted especially since the increase in students was from year to year (up to 815 students in 2016 to reach the 1097 students in 2017).

In 2018, the total number of students was approximately 1300, and an extensive work on two additional buildings took effect. In 2019, block C was inaugurated and it is currently fully functional. Block C is mainly an academic block consisting of additional normal classes, auditoriums and instructors' offices.

Among new majors launched, in LIU Halba campus, are Math, Electrical Engineering and Hospitality. Also a Radio & TV department has been opened, which necessitates specific photography and studio labs. Taking into consideration the different majors and expansions done, block D was mainly consisted of a huge theater building that can accommodate up to 500 visitors. The theater is very novel in design; it is also equipped with backstage rooms.

Besides the theater, Block D also includes a main administrative area, as well as classes for all types. The building is designed quite differently from the previously three erected buildings. The main façades have a modern contemporary look, while the façade facing blocks A, B and C was treated to match the three previous buildings.

Today, Halba Campus has 1600 plus students whose educational needs are provided for in three functional buildings, with 60 functional classes which can be grouped as follows:

4 Computer Labs for all majors and one MAC lab for interior and graphic design majors, one Translation Lab equipped with a sound System, one Electric Lab for EENG students, Biology Lab, Nutrition Lab, Chemistry Lab, Mechanical Lab, 41 normal classrooms distributed across three blocks, 6 Auditoriums and 12 offices for the instructors from different schools. The fourth building; Block D is still under preparation and awaiting equipment for many purposes including a kitchen cuisine for students studying hospitality and a radio and TV studios labs.

Overall, the ambiance and mood dynamic of Halba Campus is fortified by its exceptional location and exposure to the neighboring mountains and the beautiful nature in surrounding region coupled with the amazing family spirit among administration, staff, instructors and students as well.

2 Academic Rules and Student Life

2.1 Academic Information

2.1.1 Courses

Academic work at *LIU* is organized in concentrated modules of subject matter called courses. Each academic course occupies a scheduled amount of instructional time each semester, in addition to laboratory, field exercise, homework, and research or creative requirements associated with the course.

2.1.2 Curriculum

At the macro level, curriculum is a set of courses given in a specific program. At the micro level, the term curriculum refers to the lessons and academic content in a specific course or program. Curriculum typically encompass the knowledge and skills students are expected to learn, which includes the learning objectives they are expected to meet; the units and lessons that teachers teach; the assignments and projects given to students; the books, materials, videos, presentations, and readings used in a course; and the tests, assessments, and other methods used to evaluate student learning. John Dewey defines curriculum as a continuous reconstruction, moving from the learner's present experience out into that represented by the organized bodies of truth that it is called studies. And, Ralph Tyler defines it as all the learning experiences planned and directed by the school to attain its educational goal.

2.1.3 Credit Hours

Credit hours are the number of hours of instruction that the course is scheduled for per week. Degree programs require that a specified number of credit hours, and therefore courses, be accumulated by the student as one of the graduation requirements. One credit hour is equivalent to fifteen teaching hours per semester; therefore, a three-credit course represents forty-five hours of attendance including examinations. As for laboratories, one credit hour is equivalent to 30 hours per semester. Every degree has a specific number of credits spelled out in the University Catalog.

2.1.4 Major Courses

Major courses are mostly application courses in a program. Typically, these courses cover areas known as program criterion which represent the commonly known skills a graduate of a given program must have, however, with the advancement in any given major more areas under that major emerge; those areas may be gradually covered by **Technical Electives**.

2.1.5 Technical Electives

Although, technical electives are mostly selected from courses within related programs in a school, some technical electives may be selected from programs within different schools, such that, those electives closely relate to the major requirements courses in terms of serving programs objectives and students learning outcomes. Some programs may specify specific courses within a specified emphasis/concentration to give students the opportunity to gain depth knowledge in an emphasis of his/her choice.

2.1.6 Core Courses

Core Courses refers to a series or selection of courses that students are required to complete before they can move on to the next level in their education. Therefore, Core courses are the stepping stone into the major; a core course should serve as a prerequisite to one or more major courses.

2.1.7 General Education

General Education Courses offered at *LIU* provide a common intellectual experience for all students. The courses were designed to help students develop strong communication and critical thinking skills, a broad understanding of disciplinary areas, and the knowledge and skills necessary for responsible citizenship in an interconnected world. General Education is the foundation of all undergraduate degree programs at *LIU*. General Education areas are listed below:

- Communication skills
- Humanities, Social Sciences, Arts
- Scientific Inquiry and Discovery
- Quantitative Reasoning

2.1.8 Academic Year

1. Academic year at *LIU* is divided as per Table 1 below.
2. The numbers of weeks are excluding the final examination periods.
3. The Registrar announces the academic calendar of the following academic year during the spring semester.
4. Official Religious and national holidays in Lebanon are holidays for the university.

Table 1 : Academic Year

Semester	Number of Week	Number of hours
Fall	15	45
Spring	15	45
Summer semester / Summer Session	11 /6	45

2.1.9 Program Framework

LIU grants Bachelor and Master degrees and offers innovative academic programs with modern hybrid curricula that stress the need for general knowledge to complement specialized studies.

Degree

LIU awards undergraduate degrees that are required of students who seek to enter graduate-level research programs and study for higher degrees. Most bachelor's degree programs at *LIU* are designed to require 4 academic years (Freshman Year + Three Years) of full-time study. However, there are exceptions to this rule such as Pharmacy degree which requires Five Years besides the freshman. Also, *LIU* awards Master degrees which usually require a minimum of two years.

Major

The nature of the major concentration generally determines the specific title of the bachelor's degree to be earned. A student who successfully completes all courses required for the major qualifies for an undergraduate degree.

2.1.10 Advising Management System

Upon acceptance every student at *LIU* is assigned an advisor for the duration of freshman and sophomore years. This advisor should be a full-time faculty member appointed by the Dean/Chair according to student's program. The period of the academic orientation is fixed during each semester. This period is during the two weeks prior to pre-registration as spelled out in the academic calendar. However, Junior and Senior students are always encouraged to visit the school for any advising at any time.

The Academic Advisor shall:

1. Assist students noticing the basis of admissions, as stipulated in their Letters of Acceptances.
2. Be available throughout the academic year during office hours, and when necessary, by appointment.
3. Support students to effectively fulfill all the requirements of their degree program.
4. Familiarize students with the University academic rules, regulations, and policies.
5. Explain to student clearly the Registration process; Course offerings; Course pre-requisite; Course selection; Full-time/Part-time credit load; and Degree planning.

2.1.11 Students Classifications

LIU adopt an American classification. However, holders of the Lebanese Official Secondary Certificate are considered sophomore students and hence thirty credits are transferred automatically toward freshman upon

admission. Undergraduate degree students are classified according to the number of completed credit hours. The required number of hours of each classification is:

Table 2: Classification of Degree Level versus Number of Credits

Classification	Number of Credits
Sophomores	0 – 33
Juniors	34 - 66
Seniors	Above 67

2.1.12 Program Duration

The duration to finish a *BS degree* and an *MS degree* is usually *three years and two years* respectively. However, maximum program durations vary among schools. Consequently, a student must pass a minimum number of credits each semester. The table below is used to verify Programs durations criteria. The maximum duration of any program as listed below excludes the duration of any remedial courses.

Table 3: Programs Duration

School	Bachelor Degree		Master and PHARMD Degree	
	Duration (Years)	Minimum Number of Credits/Semester	Duration (Years)	Minimum Number of Credits/Semester
Arts & Sciences	5.5	09	3	06
Business	5.5	09	3	06
Education	5.5	09	3 (2 for TD)	06
Engineering	6.0	09	3	09
Pharmacy	8.5	10	2	08

2.1.13 Academic Probation Policy

Probation rules and Regulation for Undergraduate Students:

Undergraduate students are placed on academic probation after attempting **twenty-one credits excluding remedial courses** and their cumulative grade point average (CGPA) drop below 2.0 (70/100). The status of a student on probation is dealt with in accordance with rules and regulations below:

1. When a student is placed on probation for the first time, the student is only allowed to register a maximum of twelve credits according to **Course Repetition Criteria**. A message will be sent to the student stating: "You are on probation for the first time and you should see your advisor. Should you continue to be on probation for the third consecutive time you will be on Critical Academic Standing (CAS) in the subsequent semester".
2. When a student is placed on probation for the second consecutive time, the student is allowed to register twelve credits according to **Course Repetition Criteria** and he/she will receive the following message "You have been on probation for two consecutive times. Should you continue to be on probation for the third consecutive time you will be on Critical Academic Standing (CAS) in the subsequent semester".
3. When a student is placed on probation for the third consecutive time, the student is allowed to register twelve credits according to **Course Repetition Criteria** and he/she will receive the following message "You have been on probation for three consecutive times and you are now in Critical Academic Standing (CAS)".
4. When a student is on Critical Academic Standing (CAS), the student is allowed to register a maximum of twelve credits provided that **all failed courses** are repeated; according to repetition criteria if offered; otherwise, a minimum of **twelve credits** with D grades are repeated. It is expected that he/she earns a semester GPA greater than or equal 75 %. In that case, the student may remain on CAS until he/she raises his/her CGPA to 2.0 (70 %); otherwise, he/she will be forced to change major or risks being disqualified from the University.
5. A student is cleared from CAS once his/her cumulative GPA is greater than or equal to 2.0 (70 %)

Probation rules and Regulation for Graduate Students:

A graduate student is placed on academic probation **immediately** after his/her cumulative grade point average (CGPA) drops below the minimum requirement set by the school, that is 3.0 (80/100) for schools of Arts & Science and Business , 3.0 (80/100) for the school of Education , 2.5 (75 %) for TD and 2.0 (70/100) for the school of engineering (**It should be noted that the School of Engineering in its policy to qualify students to join the Lebanese Order of Engineers which requires that an engineer graduate completes five years of undergraduate studies, adopts the undergraduate cumulative GPA for its graduate students**). The status of a graduate student on probation is dealt with in accordance with rules and regulations below:

1. When a student is placed on probation for the first time, the student is allowed to register a maximum of twelve credits in SoEN and a maximum of nine credits in other schools provided that **six credits (SoEN)/three credits (Other schools)** are repeated if offered; courses must be repeated according to **Course Repetition Criteria**. The student will be receiving a message “You have been placed on Probation for the first time, please see your advisor. Should you continue to be on probation for the second consecutive time you will be on Critical Academic Standing (CAS) in the subsequent semester”.
2. When a student is placed on probation for the second consecutive time, the student is allowed to register a maximum of twelve credits in SoEN and a maximum of nine credits in other schools provided that **nine credits (SoEN)/six credits (Other Schools)** are repeated if offered, courses must be repeated according to **Course Repetition Criteria** and the following message is sent “ You have been on probation for two consecutive semesters and hence you will be on Critical Academic Standing (CAS) in the subsequent semester”
3. When a student is on Critical Academic Standing (CAS), it is expected that he/she earns a semester GPA greater than or equal to the minimum school’s requirement of CGPA. Otherwise, he/she will be forced to change major or risks being disqualified from the University.
4. A student is cleared from CAS once his/her cumulative GPA is greater than or equal to minimum school’s requirement of CGPA.

Note (s):

1. Students that are on CAS must be notified in a formal letter to be signed by the concerned students. The execution of this follow-up of notification and further advising is to be implemented at the program level.
2. Summer semesters are not counted in probation.
3. Students who join LIU for the first time (First Semester) and have all their grades as AW will not have such a semester counted toward probation rule.
4. The probation criteria are applied starting fall 2021-2022.

2.2 General Admission Requirements

Students who hold Lebanese Baccaulaureate or its equivalency are automatically granted thirty freshman credits which are transferred toward their Bachelor degrees. Otherwise, students must apply for either a freshman in Sciences or in Arts in compliance with the regulations of the Equivalency Committee of the Lebanese Ministry of Education and Higher Education. Furthermore, Lebanese Baccaulaureate holders who have scored 450 on the English part of SATI, 510 on the paper based TOFEL will be exempted from English Placement Test (EPT) and 5.0 on IELTS or any corresponding international exams. Otherwise, applicants are required to sit for English Placement Test in accordance with the school and/or major they are applying for. In addition, there are program dependent placement tests as detailed in sections below

2.3 Freshman Admission Requirements (Ministry Requirements)

Compliance with the requirements of the Equivalence Committee of the Ministry of Education and Higher Education is crucial, hence, the student is highly recommended to always seek advising. Accordingly, the Equivalence Committee requires that freshman student in sciences/Arts must earn **thirty credits** for completion of freshman; **nine credits** must be in the humanities and social sciences with at least **three credits** from each of these two areas/ domains. Furthermore, The Equivalence Committee requires that the **thirty credits** include **six credits** in the Natural and Physical Sciences and mathematics with at least three credits in the Natural and Physical Sciences.

Upon completion of the freshman in Sciences or Arts, students are entitled to have their completed **thirty credits** equated to the Lebanese Baccaulaureate II by the Equivalence Committee of the Ministry of Education and Higher Education. Hence, it is the responsibility of the student to follow the equivalency process with the Ministry of Education and Higher Education. Students that finish the freshman program must provide evidence of having received the equivalence of the Lebanese Baccaulaureate II before admission to any Degree Program offered by the University. Freshman student are required to take two English Language Courses as major requirements in their curricula regardless of their scores in EPT. However, the requirements to apply for the Freshman Program are listed below:

1. High School certificate based on twelve years of schooling counting from grade I, and recognized by the Lebanese Ministry of Education and Higher Education (LMEHE).
2. An official permission from the LMEHE for the Lebanese applicants.
3. During completion of the freshman year, Freshman Arts Students are expected to sit for SAT I and SAT II and score at least 2150 in both tests. Also, Freshman Science Students are expected to sit for SAT I and SAT II and score at least 2300 in both tests.
4. After Completion of Freshman year and obtaining the equivalency, students will be able to submit application at the Registrar Office to apply for the desired sophomore Program.

2.4 Undergraduate Programs

2.4.1 Application Documents

- Photocopy of the national identity or Photocopy of valid passport
- Two passport-size photos
- Family Identification
- The certificate of the Lebanese Baccaulaureate: Life Science (LS), General Science (GS), Literature and Humanities (LH), and Economics and Sociology (ES) or an equivalent degree, authenticated by the MEHE
- Original certificate of the coverage of the National Social Security Fund or its equivalent

- ❑ Pay the file opening and admission placement test fees at the cashier office

2.4.2 Admission Requirements

Undergraduate applicants should sit for University Placement tests (UPT) which vary from one school to another depending on schools' requirements. However, the tests along with their abbreviations are listed below in Table 4. It should be noted that students with a score of 50 % (High School/Secondary School Grades) and above in any of the UPT subjects may be exempted from the corresponding subject placement test except for Pre-Pharmacy applicants.

Table 4 : Placement Tests Abbreviations

PT Code	PT Title
MESPT	Mathematics for Economics & Sociology Placement Test
MGSLST	Mathematics for General Sciences & Life Sciences Placement Test
PPT	Physics Placement Test
CPT	Chemistry Placement Test
BPT	Biology Placement Test
EPT	English Placement Test
FLPT	French Language Placement Test

Table 5 : Schools Placement Tests Requirements

School / Major	PT Code
Freshman	
Freshman Arts	EPT
Freshman Sciences	EPT
School of Education	
Undergraduate	EPT
Graduate	EPT
Translation	EPT, FLPT
School of Pharmacy	
Pharmacy	EPT , CPT & BPT
School of Business	
Undergraduate	EPT &MESPT
Graduate	EPT
School of Engineering	
Undergraduate	EPT, MGSLST, CPT* ,& PPT
Graduate	EPT
School of Arts and Sciences	
Computer Science	EPT & MGSLST
Information Technology	EPT & MGSLST
Mathematics & Physics	EPT, MGSLST & PPT
Other majors	EPT , BPT and CPT
Communication Arts & Fine Arts	EPT

Examination Topics

Depending on School or Program the student is applying for, every student applying to LIU may sit for University Placement Tests (UPTs) in Mathematics, Physics, Biology and Chemistry, in addition to English. The followings clarify the main areas that candidates must concentrate on for the placements tests. **The candidate may write the Placement Tests either in French Language or English Language.**

- **Mathematics for General Sciences & Life Sciences Placement Test (MGSLST):** Limits, continuity, domain, inverse functions, Trigonometric functions, exponential and logarithmic functions, Derivative, application of derivatives, Implicit differentiation, Integration rules, integration by substitution, area, initial value problems, First and second order differential equations, Complex numbers, Solid geometry, lines, planes, distance, Statistics, probability, counting rules.

* CCE, EEE and Surveying candidates are exempted from CPT

- **Physics Entrance Exam (PPT):** Fundamentals of mechanics, including vectors, velocity and acceleration, projectiles in two motions, forces and Newton's laws, conservation of energy theorem, circular motion, work, linear momentum, oscillations, Electric forces and Electric Fields, electric potential energy and voltage, Magnetic Field, Magnetic Field created by a current, Electromagnetic and Self Induction, Resistors, capacitors, Coils, AC circuits (RC, RL and RLC series), Resonance, Transformers, reflection and refraction, mirrors, thin lenses, and atomic physics.
- **Chemistry Placement Test (CPT):** Atomic structure and electron configuration, periodic properties and chemical reactions of elements. Basic concepts of mass relationship in chemical reactions and chemical equilibrium. Acid/base, thermo-chemistry, redox, chemical kinetics, properties of gases and functional groups in organic Chemistry.
- **Biology Placement Test (BPT):** Genetics (heredity, chromosomes, mitosis, meiosis, DNA, RNA), Immune System, Endocrine System, Nervous system, and Reproductive system.
- **Mathematics for Economics & Sociology Placement Test (MESPT):** The real number system, Intervals, Absolute Value, and Distance. Polynomials, Factoring, Rational Expressions. Linear equations and some applications. Quadratic equations and applications, a two-dimensional coordinate system and graphs. Graphing techniques, table of variation, Functions and their graphs. Linear functions and lines, Quadratic functions, the algebra of functions. Polynomial Division and synthetic Division. Graphs and polynomial functions, Rational functions and their graphs, Systems of linear equations in two variables Statistic (mode, mean, variance...), Interest (simple, compound, annuity), Logic, and probability.

2.5 Graduate Programs

2.5.1 Application Documents

- Photocopy of the national identity or Photocopy of valid passport
- Two passport-size photos
- Family civil record
- The certificate of the Lebanese Baccaureate or an equivalent degree, authenticated by the MEHE
- Official Grades Transcripts authenticated by the MEHE
- Degree authenticated by the MEHE, along with its equivalency, except degrees issued from the Lebanese University
- Original certificate of the coverage of the National Social Security Fund or its equivalent
- Completing Graduate Admission Form, available at the Admission Office, this should be submitted along with the aforementioned documents.
- Pay the file opening and admission placement test fees at the cashier office

2.5.2 Admission Requirements

Admission requirements to graduate studies vary from school to another. The general requirements are listed below:

1. Be a holder of an Undergraduate degree recognized by the Lebanese Ministry of Education and Higher Education or its equivalent.
2. Obtain the recommendation of the Graduate Admission Committee after an Interview.
3. Comply with the additional admission requirements relevant to the chosen program.

2.6 Transfer Students

Credits transferred from institutions of higher education that are recognized by the Lebanese Ministry of Education and Higher Education (LMEHE) are accepted provided that the School and department concerned ensure that the credits accepted are applicable to the corresponding degree program and that a minimum grade of "C= 70 %" was obtained in an American System. The accepted credit, however, does not count toward the

student's GPA at LIU. The criteria established by LIU regarding this policy are made available to students through its website and the University Catalog. Depending on the School, a transfer student is required to complete at least 51 % of credits at LIU in order to be eligible for a degree, while the remainder of the credits that are taken at other institutions of higher education can be transferred if they satisfy the criteria of the School and Department concerned. In order to ensure that students have achieved the required outcomes and objectives specified by the department concerned, the department reserves the right not to give transfer credit for courses listed under the major requirements category even if students have taken similar courses at the institution they previously attended.

2.7 Language Proficiency Requirements

Courses at *LIU* are entirely delivered in English. Therefore, students admitted to *LIU* should exhibit a level of English proficiency by presenting one of the standardized tests listed below. Furthermore, English Placement Test (EPT) is carefully designed to measure the candidate's level of proficiency in English Language so that students are placed in the appropriate English course as indicated in Table 6 below.

Table 6: English Language Competency Descriptors

TOEFL Paper	TOEFL CBT	TOEFL IBT	IELTS	LCCI	LIU	LIU Course	LIU Credits
0 - 343	0 - 60	0 - 18	0 -1.9	L2-A1	0 - 30	ENGL051: Basic English Skills	6
344 - 433	61 - 120	19 - 40	2.0 -3.5	L4-B1	31 - 40	ENGL101: Introduction to Oral and Written Skills	6
434 - 509	121 - 179	41 - 59	3.6-4.0	L6-C1	41 - 49	ENGL151: Advanced Writing Skills	6
510 - above	180 - above	60 - above	5.0- above	L 7 -C2 above	50 - above	Exempted	
Top Score	Top Score	Top Score	Top Score	Top Score	Top Score		
677	300	120	9.0	L7	100		

2.8 Admission Validity

The admission is valid for the ongoing academic year for the Undergraduate and Graduate programs. The applicants, who do not register during the academic year in which they are accepted, will lose their right of admission and they will have to submit a new application form to be considered according to the current admission conditions.

2.9 Undergraduate Program Graduation Requirements

Graduation requirements vary from one school to another. However, Generally Students are required to accomplish the following requirements in order to be eligible for a bachelor degree:

1. Completing all required credits for the degree.
2. Satisfying all course requirements for the degree as well as remedial/intensive courses given upon admission.
3. Maintaining a minimum overall grade of 70 %.
4. Satisfying the residency requirements.
5. Where applicable, keeping the required minimum cumulative Grade for the major and core courses required for the degree, as specified by the concerned Department.
6. Follow the clearance procedure.

These conditions must be met together with the degree requirements in effect during the semester of the student's first registration at **LIU**. This shall also apply to reinstated students. However, readmitted students must meet the degree requirements in effect during the semester of their readmission, unless their readmission letter states otherwise.

2.10 Graduate Program Graduation Requirements

Graduation requirements vary from one school to another. However, Generally Students are required to accomplish the following requirements in order to be eligible for a bachelor degree:

1. Completing all required credits for the degree.
2. Satisfying all course requirements for the degree as well as remedial/intensive courses given upon admission.
3. Maintaining a minimum overall grade of 80 % except engineering.
4. Satisfying the residency requirements.
5. Where applicable, keeping the required minimum cumulative Grade for the major and core courses required for the degree, as specified by the concerned Department.
6. Follow the clearance procedure.

These conditions must be met together with the degree requirements in effect during the semester of the student's first registration at **LIU**. This shall also apply to reinstated students. However, readmitted students must meet the degree requirements in effect during the semester of their readmission, unless their readmission letter states otherwise.

3 School of Business

3.1 Vision

Our vision is to play an effective role in developing a generation of future business leaders capable of exerting a significant influence on policy, practice, and people.

3.2 Mission

Our mission is to provide students with an affirmative and career-focused education that will empower graduates with skillsets and competences for successful employability and to be innovative, engaged citizens in their careers and society. Through continuous enhancement, the School of Business strives to develop academic programs, curricula, and learning outcomes relevant to societal and market needs of a 21st-century economy.

3.3 Educational Programs

The School of Business (SoBU) offers both undergraduate and graduate programs, which consist of the following departments and divisions:

- 1. Department of Accounting Information Systems**
 - Bachelor of Business Administration in Accounting Information Systems (BAIS)
- 2. Department of Economics**
 - Bachelor of Business Administration in Economics (BECO)
- 3. Department of Banking and Finance**
 - Bachelor of Business Administration in Banking and Finance (BFIN)
- 4. Department of Hospitality and Tourism Management**
 - Bachelor of Business Administration in Hospitality and Tourism Management (BHTM)
- 5. Department Management Information Systems**
 - Bachelor of Business Administration in Management Information Systems (BMIS)
- 6. Department of Business Management and International Business Management**
 - Bachelor of Business Administration in Business Management (BMGT)
 - Bachelor of Business Administration in International Business Management (IMGT)
- 7. Department of Marketing**
 - Bachelor of Business Administration in Marketing (BMKT)
- 8. Master of Business Administration Division**
 - Master of Business Administration (MBA)
 - Master of Business Administration with Thesis (MBAT)
 - Master of Business Administration in Accounting Information Systems (MAIS)
 - Master of Business Administration in Financial Economics (MECO)
 - Master of Business Administration in Finance (MFIN)
 - Master of Business Administration in Human Resources Management (MHRM)
 - Master of Business Administration in Hospitality and Tourism Management (MHTM)
 - Master of Business Administration in Management (MMGT)
 - Master of Business Administration in Management Information Systems (MMIS)
 - Master of Business Administration in Marketing (MMKT)

In addition to the above, the SoBU has the following dual-degree programs with WORMS in Germany:

- WORMS Bachelor of Business Administration in International Business Management (WMGT)
- WORMS Master of Business Administration in Management (WMBA)

3.4 Admission Requirements

3.4.1 Undergraduate Program

Application for admission should be submitted before the end of September of each year. However, applicants may be assessed and selected at any time of the year based on their Baccalaureate II, Lebanese System, examination results and/or their Grade 12 (American System) examination results, and/or their Baccalaureate Technique examination results, and University Placement Tests (UPTs) results. Furthermore, applicants to the undergraduate programs in the School of Business are subjected to the following general conditions:

1. The candidate must have earned a recognized high school diploma, Baccalaureate II, Lebanese System, or its equivalency that is either a freshman in sciences or in arts or foreign secondary school equivalence.
2. The candidate must have earned the Lebanese Baccalaureate with an overall average of at least 50%; the baccalaureate track categories are listed below:
 - a. General Science
 - b. Natural Science
 - c. Sociology and Economics
 - d. Humanities
 - e. Baccalaureate Technique (BT): Students who hold a Baccalaureate Technique (BT) degree are eligible to join the bachelor's degree program, subject to the completion of the below courses at LIU, or at any other recognized higher education institution:
 - i. Essentials of Statistics (BSTA100)
 - ii. Essentials of Economics (BECO100)
 - iii. College Algebra (MATH100)
 - f. TS (Technical Superior) and LT (License Technique): Students who hold a TS degree in Business are eligible to join the bachelor's degree program, subject to the following conditions:
 - i. The student must have a cumulative average of 60% (12/20) in the TS degree.
 - ii. Only courses that have been completed with a minimum grade of 50% may be transferred to the student's curriculum.
 - iii. The maximum number of courses that can be transferred is 16 courses (48 credits).
 - g. Students who hold a non-Business TS degree are subject to rule (e) above.
3. A Lebanese Baccalaureate holder is exempted from a particular University Placement Test (UPT) if and only if the relevant course had been passed with 50 % and above

Table 7: School of Business Placement Criteria (Only Lebanese Baccalaureate or Its Equivalency)

Subject	Score	Placement
English	0 - 30	ENGL051 Basic English Skills
	31 - 40	ENGL101 Introduction to Oral and Written Skills
	41 - 49	ENGL151 Advanced Writing Skills
	50 and above	Exempted from ENGL051, ENGL101, and ENGL151
Math for Sociology and Economics (MSEPT)	Below 49	MATH100 (Freshman Algebra, 3 Credits)
	50 and above	Exempted

The passing grade for the aforementioned English language and scientific remedial courses is either Pass (P) or Non-Pass (NP) in which the passing grade cannot be less than 50 %.

LIU English Hierarchy versus TOEFL Scale: The Lebanese International University (LIU) takes on TOEFL Scale as a benchmark to place applicants in various English levels. Based on the results of the English Placement Test (EPT), students may be placed in English Remedial courses according to the Table 6 in section 2.7 above.

3.4.2 Graduate Program

Applications for admission in a master program should be submitted before the end of September of each year. However, applicants may be assessed and selected at any time of the year based on their bachelor's degrees. However, applicants to the graduate program in the School of Business must complete all required forms for admission as well as submit official transcripts from all colleges and Universities attended. Master level courses completed in other recognized universities may be transferred to the student's curriculum, whilst respecting both the transfer rules stipulated by the Lebanese Ministry of Education and Higher Education and the admission rules at LIU.

Lebanese International University Students: Students who have earned their bachelor's degrees in business administration from the Lebanese International University (LIU) are accepted in Master programs if and only if their Cumulative Grade is at least 70%.

Students who have earned their bachelor's degrees in other majors from The Lebanese International University (LIU) are accepted in Master programs if and only if their cumulative grade is at least 70%. Also, required remedial courses must be passed with a minimum grade of 70%.

Non- Lebanese International University (LIU) Students: Applicants who have earned their bachelor's degrees from other Universities, accredited by the Lebanese Ministry of Education and Higher Education, and their cumulative grade is at least 70% (or equivalent in non-American systems) are welcome to continue their MBA degree at LIU. As may be found necessary, applicants are also required to sit for the University English Placement Test (EPT) and take specific Remedial courses if their bachelor's degree is non-Business.

3.4.3 Transfer Students - Course Transfer Criteria

Courses taken at Universities, accredited by the Lebanese Ministry of Education and Higher Studies, are transferable to the Lebanese International University. Course transfer criteria adopted by the School of Business are as follows:

- a. Transfer of undergraduate credits from other Universities to LIU should not exceed 49% (48 credits) of total required credits; the remaining 51% (51 credits) of total credits must be taken at LIU. Furthermore, Transferred Major Courses must not exceed 50% of the total number of allowed transferred credits.
- b. Transfer of graduate credits from other first tier Universities accredited by the Ministry of Education and Higher Education to LIU should not exceed 49% (18 credits) of total required credits; the remaining 51% (21credits) of total credits must be taken at LIU.
- c. Undergraduate and graduate courses that have been transferred from another university to the university from which the applicant is transferring from are only transferred to LIU if and only if the transfer criteria (Transcripts, Course Descriptions, others) are applied on all previous institutions.
- d. An applicant who has earned a bachelor's degree in a major other than that of Business Administration from an accredited university is eligible to join the MBA program, subject to the completion of specific Remedial courses at LIU.
- e. Students who hold undergraduate level courses completed at the Lebanese Military School (الكلية الحربية) are transferrable to the School of Business Curriculum in accordance with the following conditions:
 - i. The maximum number of transferred courses is 13 courses (39 credits)
 - ii. Only academic courses may be transferred. Courses related to martial arts and military conduct cannot be transferred.
 - iii. Only courses with a minimum grade of 50% or over may be transferred.
- f. Transferable courses are subject to passing grades shown in Table 8 below:

Table 8: Course Transfer Requirements

System	Transferrable Grade (Undergraduate)	Transferrable Grade (Graduate)
American System	70% and above	80% and above
French System	50% and above	70% and above
Lebanese University and Public Universities in Arab Countries	50% and above	60% and above

3.5 Graduation Requirements

3.5.1 Undergraduate Program

An undergraduate student in the Bachelor of Business Administration (BBA) program can only graduate upon the fulfillment of the program requirements with a minimum cumulative grade of 70% (Minimum CGPA of 2.0 out of 4.0). These requirements are:

Table 9: BBA Program Requirements

Requirement Type	Number of Credits
General Education Requirements	21 Credits
General Education Electives	6 Credits
Core Requirements	45 Credits
Major Requirements	21 Credits
Major Electives	6 Credits
Total	99 Credits

The above-mentioned requirements apply to all the concentration areas of the BBA program, except for WMGT, in which the student is required to complete some of the courses at LIU and others at WORMS. The WMGT requirements are:

Table 10: WMGT Requirements

Requirement Type	Number of Credits
General Education Requirements	23 Credits (18 Credits at LIU and 5 Credits at WORMS)
General Education Electives	9 Credits (6 Credits at LIU and 3 Credits at WORMS)
Core Requirements	33 Credits (24 Credits at LIU and 9 Credits at WORMS)
Major Requirements	30 Credits (12 Credits at LIU and 18 Credits at WORMS)
Major Electives	6 Credits (at LIU)
Total	101 Credits

3.5.2 Graduate Program

A graduate student in the Masters of Business Administration (MBA) program can only graduate upon the fulfillment of the program requirements with a minimum cumulative grade of 80% (Minimum CGPA of 3.0 out of 4.0).

For the general MBA, the student is required to complete the following:

Table 11: General MBA Requirements

Requirement Type	Number of Credits
Core Requirements	27 Credits
Major Electives	12 Credits
Total	39 Credits

Concerning the MBA with thesis (MBAT), there are several eligibility criteria for enrollment; the student should have completed 18 credits (6 courses) of core requirements with a cumulative grade point average "CGPA" of at least 3.5 out of 4.0, and he/she should have good command in English. Other than this, the program requirements are:

Table 12: MBAT Requirements

Requirement Type	Number of Credits
Core Requirements	27 Credits
Major Requirements (Thesis)	6 Credits
Major Electives	6 Credits
Total	39 Credits

Furthermore, below are the requirements of the MBA program with a concentration area in accounting information systems, financial economics, finance, human resources management, hospitality and tourism management, management, management information systems, or marketing:

Table 13: MBA Program Requirements

Requirement Type	Number of Credits
Core Requirements	27 Credits
Major Requirements	6 Credits
Major Electives	6 Credits
Total	39 Credits

Moreover, the requirements of the WMBA are:

Table 14: WMBA Requirements

Requirement Type	Number of Credits
Core Requirements	21 Credits (at LIU)
Major Requirements	12 Credits (at WORMS)
Major Electives	23 Credits (at WORMS)
Total	56 Credits

3.6 Program of Study - Undergraduate Program

3.6.1 BAIS - BBA in Accounting Information Systems (99 Credits)

About the Program

Accounting is the method by which an organization or company conveys its financial related data. It is considered by many as the "language of business". Individuals who are familiar with this language are assets in the business world, making the major the most popular amongst all other business majors. The accounting program prepares undergraduate students to practice the accounting profession and to perform related business functions. It includes instruction in accounting principles and theory, financial accounting, managerial accounting, tax accounting, auditing, reporting procedures, statement analysis, and applications to organizations.

The department of accounting has the mission of preparing the undergraduate accounting students for the broad field of accountancy in order to produce internationally competitive graduates capable of succeeding in their chosen profession.

The highest priority is to provide excellence in accounting education through high-quality undergraduate teaching to students who desire to work in business, industry, and public accounting sectors, to pass the LCPA exams and to obtain professional certifications.

Domain of Work

Most of the graduates of this program find employment as a(n):

- Auditor
- Payroll Clerk
- Lebanese Certified Public Accountants (LCPA)
- Bookkeeper
- Managerial Accountant
- Credit Analysis Manager
- Tax Accountant
- Treasury Analyst
- Government Accountant

Program Educational Objectives (PEOs)

Upon successful completion of this program, students will be able to:

- PEO1:** Demonstrate proficiency in the accounting discipline.
- PEO2:** Demonstrate the ability to critically analyze and evaluate financial information for decision making.

- ❑ **PEO3:** Demonstrate competencies in the measurement, validation, and communication of financial and other information.
- ❑ **PEO4:** Demonstrate the ability to apply the practical knowledge gained in the field.

Program Learning Outcomes (PLOs)

Students will have the ability to:

- ❑ **PLO1:** Demonstrate an understanding of fundamental accounting terminology and concepts.
- ❑ **PLO2:** Demonstrate competency in preparing and analyzing financial statements.
- ❑ **PLO3:** Apply accounting principles to business transactions.
- ❑ **PLO4:** Apply proper Lebanese tax treatment for individuals and businesses.
- ❑ **PLO5:** Implement accounting, auditing and taxation concepts using computerized programs.
- ❑ **PLO6:** Analyze and evaluate accounting situations and problems and then formulate, communicate, and defend recommendations to decision-makers based on those evaluations.

Curriculum - BAIS

Course Code and Title	Credits
General Education Requirements	21
ARAB200 - Arabic Language and Literature	3
BMTH210 - Business and Managerial Math	3
BSTA205 - Introduction to Business Statistics	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251- Communication Skills	3
Core Requirements	45
BACC200 - Financial Accounting	3
BACC360 - Managerial Accounting	3
BECO210 - Introduction to Microeconomics	3
BECO260 - Introduction to Macroeconomics	3
BFIN300 - Business Finance	3
BMGT200 - Introduction to Business Management	3
BMGT300 - Introduction to Business Law	3
BMGT315 - Human Resource Management	3
BMGT340 - Organizational Behavior	3

BMGT380 - Business Ethics	3
BMIS300 - Management Information Systems	3
BMIS355 - Quantitative Methods of Business Decisions	3
BMIS360 - Operations Management	3
BMKT300 - Marketing Theory and Principles	3
IMGT490 - Global Strategic Management	3
Major Requirements	21
BACC330 - Intermediate Financial Accounting I	3
BACC370 - Intermediate Financial Accounting II	3
BACC400 - Accounting Information Systems and Applications	3
BACC420 - Tax Accounting	3
BACC430 - Auditing and Fraud Prevention	3
BACC450 - Lebanese Accounting Practices	3
BACC497 - Advanced Accounting	3
General Education Electives	6
GE**** General Education Electives	6
Major Electives	6
ME**** Major Electives	6

List of Major Electives - BAIS

Course Code and Title	Credits
BECO305 - Intermediate Microeconomics	3
BECO340 - Intermediate Macroeconomics	3
BECO365 - Growth Models and Policy	3
BECO385 - Econometrics	3
BECO400 - Labor Economics and Market Structures	3
BECO430 - International Economics and Trade	3
BFIN350 - Financial Management	3
BFIN360 - Financial Reporting and Analysis	3
BFIN400 - Financial Modeling	3
BFIN430 - International Banking and Finance	3
BFIN440 - Banking Operations	3
BFIN470 - Financial Markets and Institutions	3
BFIN475 - Financial Investments	3
BHTM305 - Introduction to Hospitality & Tourism Industry	3
BHTM311 - Lodging Management (+Opera)	3
BHTM315 - Business Etiquette & Protocol	3
BHTM340 - Restaurant Management	3
BHTM425 - Food and Beverage Cost Control	3
BHTM445 - Conventions and Meetings Management	3
BHTM495 - Revenue Management	3

BMGT360 - Research Methods for Business	3
BMGT470 - Total Quality Management	3
BMGT475 - Leadership Principles	3
BMIS310 - Business Telecommunications	3
BMIS320 - Data Management	3
BMIS370 - System Analysis and Design	3
BMIS375 - Programming Fundamentals	3
BMIS400 - E-Business	3
BMIS480 - Knowledge Management	3
BMIS497 - Business Intelligence Systems	3
BMKT310 - Digital Marketing	3
BMKT315 - Integrated Marketing Communication	3
BMKT350 - Consumer Behavior	3
BMKT360 - Market Research Methods	3
BMKT380 - Strategic Brand Management	3
BMKT420 - Customer Service Management	3
BMKT497 - Retailing & Merchandising Management	3
IMGT390 - Strategic Negotiations	3
IMGT430 - International Business Management	3
IMGT497 - Managing Entrepreneurship	3

3.6.2 BECO - BBA in Economics (99 Credits)

About the Program

The Bachelor of Business Administration in Economics is designed to prepare students for a career in economics related fields. Undergraduates will understand the economics theories and concepts and will learn the mathematical and analytical tools that help them transform facts and problems into equations and graphs. The program will help them produce practical solutions and advices that can guide private and public decision makers. The program covers several areas including microeconomics, macroeconomics, econometrics, labor economics, international economics, market structures, growth, and sustainability.

The department of economics is committed to train the students at the undergraduate level on the methods and ideas of modern economics, to prepare them to conduct applied research and to provide them with the needed skills to find job opportunities in the market.

Domain of Work

Most of the graduates of this program find employment in:

- | | |
|--|---|
| <input type="checkbox"/> Consulting | <input type="checkbox"/> Public Sector |
| <input type="checkbox"/> Research | <input type="checkbox"/> Petroleum Sector |
| <input type="checkbox"/> Data Analysis and Forecasting | <input type="checkbox"/> NGOs |
| <input type="checkbox"/> Education | <input type="checkbox"/> Banking |

Program Educational Objectives (PEOs)

Upon successful completion of a track in this program, students will be able to:

- PEO1:** Demonstrate understanding of the fundamental concepts underlying economic theory and practice.
- PEO2:** Develop clear problem statements, demonstrate knowledge in quantitative and qualitative tools for problem detection and illustrate the ability of using software to read and interpret economic data.
- PEO3:** Utilize the software competencies in generating solutions for the problems in hand.
- PEO4:** Use the mathematical approaches to represent facts and produce practical solutions as well as recommendations for policy making.
- PEO5:** Justify and communicate advice and ideas to both specialists and non-specialists.
- PEO6:** Demonstrate professional attitude and successful team members when working with others.

Program Learning Outcomes (PLOs)

Students will have the ability to:

- PLO1:** Use quantitative and qualitative tools and methodologies to identify and recognize economic problems.
- PLO2:** Demonstrate information technology skills and analytical and reflective thinking techniques to solve economic problems.
- PLO3:** Gather and clean data, whether primary or secondary, and to use software like SPSS, STATA, E-views, and R to analyze, test and run regressions.
- PLO4:** Develop clear problem statement, explain the analysis approach, and present clear conclusions and to professionally justify and communicate advice and ideas to private and public sectors.
- PLO5:** Reveal awareness and ability to handle complex ethical and cultural issues that might arise in the workplaces and work respectfully with colleagues from different backgrounds and with different organizational roles.

Curriculum - BECO

Course Code and Title	Credits
General Education Requirements	21
ARAB200 - Arabic Language and Literature	3
BMTH210 - Business and Managerial Math	3
BSTA205 - Introduction to Business Statistics	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	45
BACC200 - Financial Accounting	3
BACC360 - Managerial Accounting	3
BECO210 - Introduction to Microeconomics	3
BECO260 - Introduction to Macroeconomics	3
BFIN300 - Business Finance	3
BMGT200 - Introduction to Business Management	3
BMGT300 - Introduction to Business Law	3
BMGT315 - Human Resource Management	3
BMGT340 - Organizational Behavior	3

BMGT380 - Business Ethics	3
BMIS300 - Management Information Systems	3
BMIS355 - Quantitative Methods of Business Decisions	3
BMIS360 - Operations Management	3
BMKT300 - Marketing Theory and Principles	3
IMGT490 - Global Strategic Management	3
Major Requirements	21
BECO305 - Intermediate Microeconomics	3
BECO340 - Intermediate Macroeconomics	3
BECO365 - Growth Models and Policy	3
BECO385 - Econometrics	3
BECO400 - Labor Economics and Market Structures	3
BECO430 - International Economics and Trade	3
BFIN470 - Financial Markets and Institutions	3
General Education Electives	6
GE**** General Education Electives	6
Major Electives	6
ME**** Major Electives	6

List of Major Electives - BECO

Course Code and Title	Credits
BACC330 - Intermediate Financial Accounting I	3
BACC370 - Intermediate Financial Accounting II	3
BACC400 - Accounting Information Systems and Applications	3
BACC420 - Tax Accounting	3
BACC430 - Auditing and Fraud Prevention	3
BACC450 - Lebanese Accounting Practices	3
BACC497 - Advanced Accounting	3
BFIN350 - Financial Management	3
BFIN360 - Financial Reporting and Analysis	3
BFIN400 - Financial Modeling	3
BFIN430 - International Banking and Finance	3
BFIN440 - Banking Operations	3
BFIN475 - Financial Investments	3
BHTM305 - Introduction to Hospitality & Tourism Industry	3
BHTM311 - Lodging Management (+Opera)	3
BHTM315 - Business Etiquette & Protocol	3
BHTM340 - Restaurant Management	3
BHTM425 - Food and Beverage Cost Control	3
BHTM445 - Conventions and Meetings Management	3
BHTM495 - Revenue Management	3

BMGT360 - Research Methods for Business	3
BMGT470 - Total Quality Management	3
BMGT475 - Leadership Principles	3
BMIS310 - Business Telecommunications	3
BMIS320 - Data Management	3
BMIS370 - System Analysis and Design	3
BMIS375 - Programming Fundamentals	3
BMIS400 - E-Business	3
BMIS480 - Knowledge Management	3
BMIS497 - Business Intelligence Systems	3
BMKT310 - Digital Marketing	3
BMKT315 - Integrated Marketing Communication	3
BMKT350 - Consumer Behavior	3
BMKT360 - Market Research Methods	3
BMKT380 - Strategic Brand Management	3
BMKT420 - Customer Service Management	3
BMKT497 - Retailing & Merchandising Management	3
IMGT390 - Strategic Negotiations	3
IMGT430 - International Business Management	3
IMGT497 - Managing Entrepreneurship	3

3.6.3 BFIN - BBA in Banking and Finance (99 Credits)

About the Program

Finance is the study of managing and operating money, in order to fit into a company's budget and prepare for future expansion, success and development. The finance program prepares undergraduate students to plan, manage, and analyze the financial and monetary aspects of an institution operating in any market. It includes instructions in corporate finance, financial instruments and markets, capital planning, funds' acquisition, budgeting, financial analysis, investment, portfolio management, and forecasting.

The mission of the banking and finance department is to prepare students who are looking forward to a career in business and/or personal finance. Students wanting to work within the world's financial markets, which pulsates the world's economy, should pursue a degree in Banking and Finance.

Students who enjoy the excitement of the world's securities (stocks and bonds), commodities, money, derivatives, futures, insurance, and foreign exchange markets are well-suited to earn a banking and finance degree. This degree prepares students to enter into the exhilarating field of banking and investment, which literally changes on a minute-by-minute basis.

Domain of Work

Most of the graduates of this program find employment in:

- | | |
|---|---|
| <input type="checkbox"/> Commercial Banking | <input type="checkbox"/> Islamic Banking |
| <input type="checkbox"/> Financial Management | <input type="checkbox"/> Investment Banking |
| <input type="checkbox"/> Financial Planning Services | <input type="checkbox"/> Public Financial Accounting |
| <input type="checkbox"/> International Financial Management | <input type="checkbox"/> Private Equity and Venture Capital |
| <input type="checkbox"/> Financial Analysis | <input type="checkbox"/> Insurance |
| <input type="checkbox"/> Investment Analysis | |

Program Educational Objectives (PEOs)

Upon successful completion of a track in the Banking and Finance program, students will be able to:

- PEO1:** Organize, analyze, and interpret numerical and financial data.
- PEO2:** Exhibit sound decision-making abilities.
- PEO3:** Show proficiency in oral and written communications with the ability to explain complex financial transactions and data to others.
- PEO4:** Demonstrate the ability to organize, analyze and draw appropriate conclusions from financial information.
- PEO5:** Demonstrate the ability to apply financial information to recommend and justify solutions to financial problems.

Program Learning Outcomes (PLOs)

Students will have the ability to:

- PLO1:** Describe the financial markets mechanism and the relationship between interest rates and asset prices.
- PLO2:** Execute the basic financial concepts using Excel.
- PLO3:** Explain the fundamental principles in corporate finance.
- PLO4:** Critically evaluate financial statement information of companies and financial institutions.
- PLO5:** Evaluate different investments and techniques used in constructing and managing investment portfolios.

Curriculum - BFIN

Course Code and Title	Credits
General Education Requirements	21
ARAB200 - Arabic Language and Literature	3
BMTH210 - Business and Managerial Math	3
BSTA205 - Introduction to Business Statistics	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251- Communication Skills	3
Core Requirements	45
BACC200 - Financial Accounting	3
BACC360 - Managerial Accounting	3
BECO210 - Introduction to Microeconomics	3
BECO260 - Introduction to Macroeconomics	3
BFIN300 - Business Finance	3
BMGT200 - Introduction to Business Management	3
BMGT300 - Introduction to Business Law	3
BMGT315 - Human Resource Management	3
BMGT340 - Organizational Behavior	3

BMGT380 - Business Ethics	3
BMIS300 - Management Information Systems	3
BMIS355 - Quantitative Methods of Business Decisions	3
BMIS360 - Operations Management	3
BMKT300 - Marketing Theory and Principles	3
IMGT490 - Global Strategic Management	3
Major Requirements	21
BFIN350 - Financial Management	3
BFIN360 - Financial Reporting and Analysis	3
BFIN400 - Financial Modeling	3
BFIN430 - International Banking and Finance	3
BFIN440 - Banking Operations	3
BFIN470 - Financial Markets and Institutions	3
BFIN475 - Financial Investments	3
General Education Electives	6
GE**** General Education Electives	6
Major Electives	6
ME**** Major Electives	6

List of Major Electives - BFIN

Course Code and Title	Credits
BACC330 - Intermediate Financial Accounting I	3
BACC370 - Intermediate Financial Accounting II	3
BACC400 - Accounting Information Systems and Applications	3
BACC420 - Tax Accounting	3
BACC430 - Auditing and Fraud Prevention	3
BACC450 - Lebanese Accounting Practices	3
BACC497 - Advanced Accounting	3
BECO305 - Intermediate Microeconomics	3
BECO340 - Intermediate Macroeconomics	3
BECO365 - Growth Models and Policy	3
BECO385 - Econometrics	3
BECO400 - Labor Economics and Market Structures	3
BECO430 - International Economics and Trade	3
BHTM305 - Introduction to Hospitality & Tourism Industry	3
BHTM311 - Lodging Management (+Opera)	3
BHTM315 - Business Etiquette & Protocol	3
BHTM340 - Restaurant Management	3
BHTM425 - Food and Beverage Cost Control	3
BHTM445 - Conventions and Meetings Management	3
BHTM495 - Revenue Management	3

BMGT360 - Research Methods for Business	3
BMGT470 - Total Quality Management	3
BMGT475 - Leadership Principles	3
BMIS310 - Business Telecommunications	3
BMIS320 - Data Management	3
BMIS370 - System Analysis and Design	3
BMIS375 - Programming Fundamentals	3
BMIS400 - E-Business	3
BMIS480 - Knowledge Management	3
BMIS497 - Business Intelligence Systems	3
BMKT310 - Digital Marketing	3
BMKT315 - Integrated Marketing Communication	3
BMKT350 - Consumer Behavior	3
BMKT360 - Market Research Methods	3
BMKT380 - Strategic Brand Management	3
BMKT420 - Customer Service Management	3
BMKT497 - Retailing & Merchandising Management	3
IMGT390 - Strategic Negotiations	3
IMGT430 - International Business Management	3
IMGT497 - Managing Entrepreneurship	3

3.6.4 BHTM - BBA in Hospitality and Tourism Management (99 Credits)

About the Program

The BBA in Hospitality and Tourism Management aims at preparing students to succeed in all the various aspects of managing hospitality and tourism businesses namely: hotels, restaurants, catering, food processing, travel, and tourism, all in alignment with social and ethical issues in the industry.

The mission of the department of hospitality and tourism management is to provide outstanding community-focused hospitality and tourism professionals with dynamic management and leadership skills grounded in significant, contemporary industry experience.

Domain of Work

Most of the graduates of this program find employment as a(n):

- | | |
|--|---|
| <input type="checkbox"/> Travel Agent | <input type="checkbox"/> Amusement Parks Manager |
| <input type="checkbox"/> Hotel Manager (all departments of a hotel) | <input type="checkbox"/> Cruise Crew |
| <input type="checkbox"/> Spa Manager | <input type="checkbox"/> Consultant in Hospitality and Tourism Industry |
| <input type="checkbox"/> Tour Operator | <input type="checkbox"/> Transportation Agent (shipping lines and freight forwarders) |
| <input type="checkbox"/> Events and Conferences Organizer | <input type="checkbox"/> Governmental and Non-Governmental Organizations (Ministry – Municipality – Airport – UN) |
| <input type="checkbox"/> Food and Beverages Manager – Restaurant Manager | |
| <input type="checkbox"/> Leisure Manager | |
| <input type="checkbox"/> Airline Crew | |

Program Educational Objectives (PEOs)

Upon successful completion of a track in the Hospitality and Tourism program, students will be able to:

- PEO1:** Demonstrate knowledge of the fundamental theories and techniques in tourism management and hospitality services.
- PEO2:** Develop successful professional careers in the hospitality and tourism industry, in governmental, academic, and professional positions.
- PEO3:** Demonstrate the management skills, abilities, and techniques necessary to develop a business in Hospitality and Tourism.
- PEO4:** Create a network of classmates, tutors, faculty members, experts in tourism and hotel management, which will allow the development of the contacts necessary to enter and succeed in the sector.

Program Learning Outcomes (PLOs)

Students will have the ability to:

- PLO1:** Recognize the fundamental principles of essential areas of accounting, marketing, finance, management and hospitality and tourism business functions.
- PLO2:** Execute skills necessary in entry-level restaurant, banquet operations, travel and tourism and hotel operations.
- PLO3:** Experiment professional, ethical behavior and competencies in business management and customer service.
- PLO4:** Enhance the ability to work both independently and as a team member in collaborative projects.
- PLO5:** Achieve the ability to plan events and menus in the hospitality/tourism industry.

Curriculum - BHTM

Course Code and Title	Credits
General Education Requirements	21
ARAB200 - Arabic Language and Literature	3
BMTH210 - Business and Managerial Math	3
BSTA205 - Introduction to Business Statistics	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251- Communication Skills	3
Core Requirements	45
BACC200 - Financial Accounting	3
BACC360 - Managerial Accounting	3
BECO210 - Introduction to Microeconomics	3
BECO260 - Introduction to Macroeconomics	3
BFIN300 - Business Finance	3
BMGT200 - Introduction to Business Management	3
BMGT300 - Introduction to Business Law	3
BMGT315 - Human Resource Management	3
BMGT340 - Organizational Behavior	3

BMGT380 - Business Ethics	3
BMIS300 - Management Information Systems	3
BMIS355 - Quantitative Methods of Business Decisions	3
BMIS360 - Operations Management	3
BMKT300 - Marketing Theory and Principles	3
IMGT490 - Global Strategic Management	3
Major Requirements	21
BHTM305 - Introduction to Hospitality & Tourism Industry	3
BHTM311 - Lodging Management (+Opera)	3
BHTM315 - Business Etiquette & Protocol	3
BHTM340 - Restaurant Management	3
BHTM425 - Food and Beverage Cost Control	3
BHTM445 - Conventions and Meetings Management	3
BHTM495 - Revenue Management	3
General Education Electives	6
GE**** General Education Electives	6
Major Electives	6
ME**** Major Electives	6

List of Major Electives - BHTM

Course Code and Title	Credits
BACC330 - Intermediate Financial Accounting I	3
BACC370 - Intermediate Financial Accounting II	3
BACC400 - Accounting Information Systems and Applications	3
BACC420 - Tax Accounting	3
BACC430 - Auditing and Fraud Prevention	3
BACC450 - Lebanese Accounting Practices	3
BACC497 - Advanced Accounting	3
BECO305 - Intermediate Microeconomics	3
BECO340 - Intermediate Macroeconomics	3
BECO365 - Growth Models and Policy	3
BECO385 - Econometrics	3
BECO400 - Labor Economics and Market Structures	3
BECO430 - International Economics and Trade	3
BFIN350 - Financial Management	3
BFIN360 - Financial Reporting and Analysis	3
BFIN400 - Financial Modeling	3
BFIN430 - International Banking and Finance	3
BFIN440 - Banking Operations	3
BFIN470 - Financial Markets and Institutions	3

BFIN475 - Financial Investments	3
BMGT360 - Research Methods for Business	3
BMGT470 - Total Quality Management	3
BMGT475 - Leadership Principles	3
BMIS310 - Business Telecommunications	3
BMIS320 - Data Management	3
BMIS370 - System Analysis and Design	3
BMIS375 - Programming Fundamentals	3
BMIS400 - E-Business	3
BMIS480 - Knowledge Management	3
BMIS497 - Business Intelligence Systems	3
BMKT310 - Digital Marketing	3
BMKT315 - Integrated Marketing Communication	3
BMKT350 - Consumer Behavior	3
BMKT360 - Market Research Methods	3
BMKT380 - Strategic Brand Management	3
BMKT497 - Retailing & Merchandising Management	3
IMGT390 - Strategic Negotiations	3
IMGT430 - International Business Management	3
IMGT497 - Managing Entrepreneurship	3

3.6.5 BMGT - BBA in Business Management (99 Credits)

About the Program

Management teaches you to understand how people behave in organizations, and the nature of power, influence, and leadership.

The Bachelor of Business Administration in Business Management (BMGT) graduates ethically aware prospective business and civic leaders who are effective communicators, team leaders, critical thinkers, and problem solvers. Our faculty strive to deliver a high-quality business education via experiential education, a relevant curriculum, and scholarly contributions. We pursue continuous improvement opportunities to add value for our College and its stakeholders.

Domain of Work

Most of the graduates of this program find employment as a(n):

- | | |
|--|---|
| <input type="checkbox"/> Chief Executive Officer | <input type="checkbox"/> Administrative Manager |
| <input type="checkbox"/> General Manager | <input type="checkbox"/> Branch Manager |
| <input type="checkbox"/> Sales Manager | <input type="checkbox"/> Business Manager |
| <input type="checkbox"/> Purchasing Manager | <input type="checkbox"/> Office Manager |
| <input type="checkbox"/> Project Manager | <input type="checkbox"/> Account Manager |
| <input type="checkbox"/> Analytical Manager | |

Program Educational Objectives (PEOs)

Our graduates will demonstrate the ability to apply theoretical knowledge to business-related challenges in the constantly changing environment. The educational objectives of this program are to:

- PEO1:** Identify the role of business functions.
- PEO2:** Recognize and evaluate the impact of internal and external risks and opportunities.
- PEO3:** Demonstrate adequate skills to jump-start their careers.
- PEO4:** Use information technology in operational decision-making.
- PEO5:** Pursue professional and academic development.
- PEO6:** Appraise business performance based on quantitative and qualitative data.
- PEO7:** Use basic research tools to write papers and reports at the undergraduate level.
- PEO8:** Demonstrate ethical and socially responsible behavior.
- PEO9:** Behave professionally and in an informed manner.
- PEO10:** Communicate effectively.

Program Learning Outcomes (PLOs)

Students will have the ability to:

- PLO1:** Integrate business theory and knowledge with management practice.
- PLO2:** Implement practical skills to inform and guide their decisions.
- PLO3:** Articulate and apply ethical values in the diverse, global workplace.
- PLO4:** Communicate effectively.
- PLO5:** Apply critical thinking to decision making.

Curriculum - BMGT

Course Code and Title	Credits
General Education Requirements	21
ARAB200 - Arabic Language and Literature	3
BMTH210 - Business and Managerial Math	3
BSTA205 - Introduction to Business Statistics	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251- Communication Skills	3
Core Requirements	45
BACC200 - Financial Accounting	3
BACC360 - Managerial Accounting	3
BECO210 - Introduction to Microeconomics	3
BECO260 - Introduction to Macroeconomics	3
BFIN300 - Business Finance	3
BMGT200 - Introduction to Business Management	3
BMGT300 - Introduction to Business Law	3
BMGT315 - Human Resource Management	3
BMGT340 - Organizational Behavior	3

BMGT380 - Business Ethics	3
BMIS300 - Management Information Systems	3
BMIS355 - Quantitative Methods of Business Decisions	3
BMIS360 - Operations Management	3
BMKT300 - Marketing Theory and Principles	3
IMGT490 - Global Strategic Management	3
Major Requirements	21
BHTM315 - Business Etiquette & Protocol	3
BMGT360 - Research Methods for Business	3
BMGT470 - Total Quality Management	3
BMGT475 - Leadership Principles	3
BMIS400 - E-Business	3
BMKT310 - Digital Marketing	3
IMGT497 - Managing Entrepreneurship	3
General Education Electives	6
GE**** General Education Electives	6
Major Electives	6
ME**** Major Electives	6

List of Major Electives - BMGT

Course Code and Title	Credits
BACC330 - Intermediate Financial Accounting I	3
BACC370 - Intermediate Financial Accounting II	3
BACC400 - Accounting Information Systems and Applications	3
BACC420 - Tax Accounting	3
BACC430 - Auditing and Fraud Prevention	3
BACC450 - Lebanese Accounting Practices	3
BACC497 - Advanced Accounting	3
BECO305 - Intermediate Microeconomics	3
BECO340 - Intermediate Macroeconomics	3
BECO365 - Growth Models and Policy	3
BECO385 - Econometrics	3
BECO400 - Labor Economics and Market Structures	3
BECO430 - International Economics and Trade	3
BFIN350 - Financial Management	3
BFIN360 - Financial Reporting and Analysis	3
BFIN400 - Financial Modeling	3
BFIN430 - International Banking and Finance	3
BFIN440 - Banking Operations	3
BFIN470 - Financial Markets and Institutions	3
BFIN475 - Financial Investments	3

BHTM305 - Introduction to Hospitality & Tourism Industry	3
BHTM311 - Lodging Management (+Opera)	3
BHTM340 - Restaurant Management	3
BHTM425 - Food and Beverage Cost Control	3
BHTM445 - Conventions and Meetings Management	3
BHTM495 - Revenue Management	3
BMIS310 - Business Telecommunications	3
BMIS320 - Data Management	3
BMIS370 - System Analysis and Design	3
BMIS375 - Programming Fundamentals	3
BMIS480 - Knowledge Management	3
BMIS497 - Business Intelligence Systems	3
BMKT315 - Integrated Marketing Communication	3
BMKT350 - Consumer Behavior	3
BMKT360 - Market Research Methods	3
BMKT380 - Strategic Brand Management	3
BMKT420 - Customer Service Management	3
BMKT497 - Retailing & Merchandising Management	3
IMGT390 - Strategic Negotiations	3
IMGT430 - International Business Management	3

3.6.6 BMIS - BBA in Management Information Systems (99 Credits)

About the Program

Management Information Systems is the study of how technology can be used to solve business problems and create new business opportunities. The program focuses on a mix of applied computer systems knowledge, communication and interpersonal skills, and a practical business orientation to produce graduates who have technical skills as well as a deep understanding of business functions and processes.

The program includes interactive, practical courses that focus on providing students with the real-world knowledge and hands-on skills they need to successfully build and transform technology. Through the expertise gained from a vast array of courses, Management Information Systems graduates act as a bridge between the business and technology professionals at organizations.

The management information systems program provides students with the knowledge and real-world skills to be developers of change within industries, which will lead towards progress of the wider community. The integration of business and information technologies will empower students to align strategies and complex business ecosystems.

Domain of Work

Most of the graduates of this program find employment as a(n):

- | | |
|---|--|
| <input type="checkbox"/> Information Systems Manager | <input type="checkbox"/> Business Data Analyst |
| <input type="checkbox"/> Project Manager | <input type="checkbox"/> Network Administrator |
| <input type="checkbox"/> Database Administrator | <input type="checkbox"/> Technical Support Specialist |
| <input type="checkbox"/> Business Application Developer | <input type="checkbox"/> SEO Specialist |
| <input type="checkbox"/> System Developer / Web Developer | <input type="checkbox"/> IS Consultant / IT Consultant |
| <input type="checkbox"/> System Analyst and Designer | |

Program Educational Objectives (PEOs)

The educational objectives of this program are to:

- PEO1:** Introduce students to relevant business information technologies, teamwork, and decision making necessary for the integration of business processes using information technology.
- PEO2:** Provide students with understanding of the strategic use of IT.
- PEO3:** Prepare students to use the systems development life cycle along with its tools, techniques, methodologies, and processes, to develop computer-based information systems that meet the needs of businesses and organizations.
- PEO4:** Provide students with programming skills to use in the development of solutions in business.
- PEO5:** Provide students with database skills used to perform data analysis, design, implementation, and administration.
- PEO6:** Equip students with a thorough understanding of the existing use of data communications networks and future developments in this area.
- PEO7:** Prepare students for the development of computer-based systems projects from the point of request through analysis, design, development, documentation, testing, and implementation.

Program Learning Outcomes (PLOs)

Students will have the ability to:

- PLO1:** Explain the major concepts in the functional areas of accounting, marketing, finance, and management.
- PLO2:** Construct and present effective oral and written forms of professional communication.
- PLO3:** Describe the increasingly applied role of information systems in corporate decision-making.
- PLO4:** Evaluate the professional, ethical, legal, and social issues related to information systems.
- PLO5:** Apply modern tools, techniques, and technology in a functional and productive manner.

Curriculum - BMIS

Course Code and Title	Credits
General Education Requirements	21
ARAB200 - Arabic Language and Literature	3
BMTH210 - Business and Managerial Math	3
BSTA205 - Introduction to Business Statistics	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	45
BACC200 - Financial Accounting	3
BACC360 - Managerial Accounting	3
BECO210 - Introduction to Microeconomics	3
BECO260 - Introduction to Macroeconomics	3
BFIN300 - Business Finance	3
BMGT200 - Introduction to Business Management	3
BMGT300 - Introduction to Business Law	3
BMGT315 - Human Resource Management	3
BMGT340 - Organizational Behavior	3

BMGT380 - Business Ethics	3
BMIS300 - Management Information Systems	3
BMIS355 - Quantitative Methods of Business Decisions	3
BMIS360 - Operations Management	3
BMKT300 - Marketing Theory and Principles	3
IMGT490 - Global Strategic Management	3
Major Requirements	21
BMIS310 - Business Telecommunications	3
BMIS320 - Data Management	3
BMIS370 - System Analysis and Design	3
BMIS375 - Programming Fundamentals	3
BMIS400 - E-Business	3
BMIS480 - Knowledge Management	3
BMIS497 - Business Intelligence Systems	3
General Education Electives	6
GE**** General Education Electives	6
Major Electives	6
ME**** Major Electives	6

List of Major Electives - BMIS

Course Code and Title	Credits
BACC330 - Intermediate Financial Accounting I	3
BACC370 - Intermediate Financial Accounting II	3
BACC400 - Accounting Information Systems and Applications	3
BACC420 - Tax Accounting	3
BACC430 - Auditing and Fraud Prevention	3
BACC450 - Lebanese Accounting Practices	3
BACC497 - Advanced Accounting	3
BECO305 - Intermediate Microeconomics	3
BECO340 - Intermediate Macroeconomics	3
BECO365 - Growth Models and Policy	3
BECO385 - Econometrics	3
BECO400 - Labor Economics and Market Structures	3
BECO430 - International Economics and Trade	3
BFIN350 - Financial Management	3
BFIN360 - Financial Reporting and Analysis	3
BFIN400 - Financial Modeling	3
BFIN430 - International Banking and Finance	3
BFIN440 - Banking Operations	3
BFIN470 - Financial Markets and Institutions	3
BFIN475 - Financial Investments	3

BHTM305 - Introduction to Hospitality & Tourism Industry	3
BHTM311 - Lodging Management (+Opera)	3
BHTM315 - Business Etiquette & Protocol	3
BHTM340 - Restaurant Management	3
BHTM425 - Food and Beverage Cost Control	3
BHTM445 - Conventions and Meetings Management	3
BHTM495 - Revenue Management	3
BMGT360 - Research Methods for Business	3
BMGT470 - Total Quality Management	3
BMGT475 - Leadership Principles	3
BMKT310 - Digital Marketing	3
BMKT315 - Integrated Marketing Communication	3
BMKT350 - Consumer Behavior	3
BMKT360 - Market Research Methods	3
BMKT380 - Strategic Brand Management	3
BMKT420 - Customer Service Management	3
BMKT497 - Retailing & Merchandising Management	3
IMGT390 - Strategic Negotiations	3
IMGT430 - International Business Management	3
IMGT497 - Managing Entrepreneurship	3

3.6.7 BMKT - BBA in Marketing (99 Credits)

About the Program

The marketing program is designed to prepare creative individuals who are able to cope with the changing business environment and eager to face the digital and global market challenges.

Students will gain insightful knowledge on how to use and integrate the emerging digital channels in designing a marketing strategy. They will be skilled to effectively gather and leverage data to make customer-driven decisions. While understanding the societal marketing concept, students will take impactful decision that will positively affect the society and the economy.

The department's mission is to equip students with analytical and practical skills and knowledge to become professionals who are able to provide innovative solutions and superior value for their stakeholders in a wide range of organizations including business, non-profit organizations, and government entities while dealing with a dynamic global marketplace.

Domain of Work

Most of the graduates of this program find employment as a(n):

- | | |
|--|--|
| <input type="checkbox"/> Marketing Analyst | <input type="checkbox"/> Digital Marketing Specialist |
| <input type="checkbox"/> Publicist or Public Relations Account Executive | <input type="checkbox"/> Content Marketing Manager |
| <input type="checkbox"/> Brand Manager | <input type="checkbox"/> Media Planner and Buyer |
| <input type="checkbox"/> Search Engine Marketing (SEM) Specialist | <input type="checkbox"/> Online Customer Acquisition Manager |
| <input type="checkbox"/> Search Engine Optimization (SEO) Specialist | <input type="checkbox"/> Advertising Account Planner and Executive |
| | <input type="checkbox"/> Market Researcher |

Program Educational Objectives (PEOs)

The educational objectives of this program are to:

- PEO1:** Conduct marketing research and utilize marketing intelligence system in identifying markets and apply market solutions accordingly.
- PEO2:** Integrate theoretical knowledge and technical skills tools necessary to conduct marketing programs and mixes considering both the sellers and buyers' perspective.
- PEO3:** Develop an effective communication using digital and traditional tools to reach target audience.
- PEO4:** Demonstrate awareness of the global and environmental challenges when developing marketing strategies.
- PEO5:** Develop and implement a comprehensive marketing plan for any type of product, service, or business competently and guided by customer values and ethical practices.

Program Learning Outcomes (PLOs)

Students will have the ability to:

- PLO1:** Understand core marketing terminology and concepts; while being customer centric; in various areas such as consumer behavior product, promotion, distribution, and pricing decisions; marketing policy; digital marketing; retailing management; sales management and customer service; integrated marketing communications; and market research.
- PLO2:** Demonstrate effective written and oral communication skills.
- PLO3:** Develop an understanding of how marketing initiatives by businesses and non-profit organizations impact society and economy.
- PLO4:** Effectively apply marketing concepts as utilized in today's business environment and deal with potential challenges of marketing in an international and a global context.
- PLO5:** Apply the acquired knowledge and tools in an integrated manner to analyze real-life business case studies.
- PLO6:** Demonstrate the knowledge of digital and traditional channels of distribution.

Curriculum - BMKT

Course Code and Title	Credits
General Education Requirements	21
ARAB200 - Arabic Language and Literature	3
BMTH210 - Business and Managerial Math	3
BSTA205 - Introduction to Business Statistics	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251- Communication Skills	3
Core Requirements	45
BACC200 - Financial Accounting	3
BACC360 - Managerial Accounting	3
BECO210 - Introduction to Microeconomics	3
BECO260 - Introduction to Macroeconomics	3
BFIN300 - Business Finance	3
BMGT200 - Introduction to Business Management	3
BMGT300 - Introduction to Business Law	3
BMGT315 - Human Resource Management	3
BMGT340 - Organizational Behavior	3

BMGT380 - Business Ethics	3
BMIS300 - Management Information Systems	3
BMIS355 - Quantitative Methods of Business Decisions	3
BMIS360 - Operations Management	3
BMKT300 - Marketing Theory and Principles	3
IMGT490 - Global Strategic Management	3
Major Requirements	21
BMKT310 - Digital Marketing	3
BMKT315 - Integrated Marketing Communication	3
BMKT350 - Consumer Behavior	3
BMKT360 - Market Research Methods	3
BMKT380 - Strategic Brand Management	3
BMKT420 - Customer Service Management	3
BMKT497 - Retailing & Merchandising Management	3
General Education Electives	6
GE**** General Education Electives	6
Major Electives	6
ME**** Major Electives	6

List of Major Electives - BMKT

Course Code and Title	Credits
BACC330 - Intermediate Financial Accounting I	3
BACC370 - Intermediate Financial Accounting II	3
BACC400 - Accounting Information Systems and Applications	3
BACC420 - Tax Accounting	3
BACC430 - Auditing and Fraud Prevention	3
BACC450 - Lebanese Accounting Practices	3
BACC497 - Advanced Accounting	3
BECO305 - Intermediate Microeconomics	3
BECO340 - Intermediate Macroeconomics	3
BECO365 - Growth Models and Policy	3
BECO385 - Econometrics	3
BECO400 - Labor Economics and Market Structures	3
BECO430 - International Economics and Trade	3
BFIN350 - Financial Management	3
BFIN360 - Financial Reporting and Analysis	3
BFIN400 - Financial Modeling	3
BFIN430 - International Banking and Finance	3
BFIN440 - Banking Operations	3
BFIN470 - Financial Markets and Institutions	3
BFIN475 - Financial Investments	3

BHTM305 - Introduction to Hospitality & Tourism Industry	3
BHTM311 - Lodging Management (+Opera)	3
BHTM315 - Business Etiquette & Protocol	3
BHTM340 - Restaurant Management	3
BHTM425 - Food and Beverage Cost Control	3
BHTM445 - Conventions and Meetings Management	3
BHTM495 - Revenue Management	3
BMGT360 - Research Methods for Business	3
BMGT470 - Total Quality Management	3
BMGT475 - Leadership Principles	3
BMIS310 - Business Telecommunications	3
BMIS320 - Data Management	3
BMIS370 - System Analysis and Design	3
BMIS375 - Programming Fundamentals	3
BMIS400 - E-Business	3
BMIS480 - Knowledge Management	3
BMIS497 - Business Intelligence Systems	3
IMGT390 - Strategic Negotiations	3
IMGT430 - International Business Management	3
IMGT497 - Managing Entrepreneurship	3

3.6.8 IMGT - BBA in International Business Management (99 Credits)

About the Program

The International Business Management degree prepares students for a huge variety of business roles in a global context, whether they're interested in entrepreneurship, global innovation, corporate strategy, consultancy, or multinational management.

The Bachelor of Business Administration in International Business Management (IMGT) combines a solid grounding in contemporary management practices with critical perspectives that help global citizens meet the complex challenges of today's professional world with meaningful, authentic, and ethical approaches.

Domain of Work

Most of the graduates of this program find employment as a(n):

- International Trade and Custom Manager
- Business Development Manager
- Regional Manager
- Global Manager
- International Project Manager
- International Analytical Manager
- International Business Manager

Program Educational Objectives (PEOs)

Studying international business allows you to see how globalization has brought about an increasing connectedness of businesses, markets, people, and information across countries. The educational objectives of this program are to:

- PEO1:** Provide a strong foundation in the international implications for the business disciplines.
- PEO2:** Develop students' cultural understanding.
- PEO3:** Develop students' competencies in addressing specific managerial issues related to international business, such as ethical considerations, managing foreign exchange risk, managing a multicultural work force, etc.
- PEO4:** Provide relevant methods in research and in the development of professional work.
- PEO5:** Stipulate developed skills in international business, innovation, and entrepreneurship.
- PEO6:** Exhibit the leadership capacity and teamwork skills for business decision making.
- PEO7:** Understand the ethical implication of business decision making and recognize ethical dilemmas.

Program Learning Outcomes (PLOs)

Students will have the ability to:

- PLO1:** Explain business expansion abroad and key issues related to their operations in other countries.
- PLO2:** Compare and contrast cultures and societies globally using socioeconomic and cultural frameworks.
- PLO3:** Articulate and apply ethical values in the diverse-global workplace.
- PLO4:** Develop an entry strategy into other markets recognizing the nature of institutions and forces governing the process of globalization.
- PLO5:** Accomplish an independent, well-defined research and development project under guidance in accordance with professional codes of ethics and norms.
- PLO6:** Communicate professional problems, analyses, and conclusions to specialists as well as to the general public.
- PLO7:** Indicate problem issues within international business and/or innovation and entrepreneurship, analyze these issues, draw conclusions, and disseminate findings in academia and business.

Curriculum - IMGT

Course Code and Title	Credits
General Education Requirements	21
ARAB200 - Arabic Language and Literature	3
BMTH210 - Business and Managerial Math	3
BSTA205 - Introduction to Business Statistics	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251- Communication Skills	3
Core Requirements	45
BACC200 - Financial Accounting	3
BACC360 - Managerial Accounting	3
BECO210 - Introduction to Microeconomics	3
BECO260 - Introduction to Macroeconomics	3
BFIN300 - Business Finance	3
BMGT200 - Introduction to Business Management	3
BMGT300 - Introduction to Business Law	3
BMGT315 - Human Resource Management	3
BMGT340 - Organizational Behavior	3

BMGT380 - Business Ethics	3
BMIS300 - Management Information Systems	3
BMIS355 - Quantitative Methods of Business Decisions	3
BMIS360 - Operations Management	3
BMKT300 - Marketing Theory and Principles	3
IMGT490 - Global Strategic Management	3
Major Requirements	21
BMGT360 - Research Methods for Business	3
BMGT475 - Leadership Principles	3
BMIS400 - E-Business	3
BMKT310 - Digital Marketing	3
IMGT390 - Strategic Negotiations	3
IMGT430 - International Business Management	3
IMGT497 - Managing Entrepreneurship	3
General Education Electives	6
GE**** General Education Electives	6
Major Electives	6
ME**** Major Electives	6

List of Major Electives - IMGT

Course Code and Title	Credits
BACC330 - Intermediate Financial Accounting I	3
BACC370 - Intermediate Financial Accounting II	3
BACC400 - Accounting Information Systems and Applications	3
BACC420 - Tax Accounting	3
BACC430 - Auditing and Fraud Prevention	3
BACC450 - Lebanese Accounting Practices	3
BACC497 - Advanced Accounting	3
BECO305 - Intermediate Microeconomics	3
BECO340 - Intermediate Macroeconomics	3
BECO365 - Growth Models and Policy	3
BECO385 - Econometrics	3
BECO400 - Labor Economics and Market Structures	3
BECO430 - International Economics and Trade	3
BFIN350 - Financial Management	3
BFIN360 - Financial Reporting and Analysis	3
BFIN400 - Financial Modeling	3
BFIN430 - International Banking and Finance	3
BFIN440 - Banking Operations	3
BFIN470 - Financial Markets and Institutions	3
BFIN475 - Financial Investments	3

BHTM305 - Introduction to Hospitality & Tourism Industry	3
BHTM311 - Lodging Management (+Opera)	3
BHTM315 - Business Etiquette & Protocol	3
BHTM340 - Restaurant Management	3
BHTM425 - Food and Beverage Cost Control	3
BHTM445 - Conventions and Meetings Management	3
BHTM495 - Revenue Management	3
BMGT470 - Total Quality Management	3
BMIS310 - Business Telecommunications	3
BMIS320 - Data Management	3
BMIS370 - System Analysis and Design	3
BMIS375 - Programming Fundamentals	3
BMIS480 - Knowledge Management	3
BMIS497 - Business Intelligence Systems	3
BMKT315 - Integrated Marketing Communication	3
BMKT350 - Consumer Behavior	3
BMKT360 - Market Research Methods	3
BMKT380 - Strategic Brand Management	3
BMKT420 - Customer Service Management	3
BMKT497 - Retailing & Merchandising Management	3

3.6.9 WMGT - WORMS BBA in International Business Management (101 Credits)

About the Program

The LIU-WORMS International Business Management degree enables students to cultivate essential skills and develop a deep understanding of the trends and challenges facing global business operations through a unique dual degree between LIU and WORMS.

The Bachelor of Business Administration in International Business Management (WMGT) empowers the future global business leaders by offering them the opportunity to acquire key industry knowledge and successfully conduct business on a global scale through a practical exposure to an international academic and cultural experience.

Domain of Work

Most of the graduates of this program find employment as:

- | | |
|--|---|
| <input type="checkbox"/> Credit Manager | <input type="checkbox"/> Procurement Manager |
| <input type="checkbox"/> Lending Officer | <input type="checkbox"/> Product Manager |
| <input type="checkbox"/> Business Advisor | <input type="checkbox"/> Foreign Commercial Service Officer |
| <input type="checkbox"/> Corporate Investment Banker | <input type="checkbox"/> Project Manager |
| <input type="checkbox"/> Market Analyst | <input type="checkbox"/> Account Manager |
| <input type="checkbox"/> Assistant Treasurer | <input type="checkbox"/> Management Consultant |

Program Educational Objectives (PEOs)

Studying international business allows you to see how globalization has brought about an increasing connectedness of businesses, markets, people, and information across countries. The educational objectives of this program are to:

- PEO1:** Promote diversity and give the students a sought-after international exposure to two different cultures.
- PEO2:** Provide a strong foundation in the international implications for the business disciplines.
- PEO3:** Develop students' competencies in addressing specific managerial issues related to international business, such as ethical considerations, managing foreign exchange risk, managing a multicultural work force, etc.
- PEO4:** Provide relevant methods in research and in the development of professional work.
- PEO5:** Stipulate developed skills in international business, innovation, and entrepreneurship.
- PEO6:** Exhibit the leadership capacity and teamwork skills for business decision making.
- PEO7:** Understand the ethical implication of business decision making and recognize ethical dilemmas.

Program Learning Outcomes (PLOs)

Students will have the ability to:

- PLO1:** Understand the globally forced business environment and discover new perspectives while cultivating critical thinking skills.
- PLO2:** Explain business expansion abroad and key issues related to their operations in other countries.
- PLO3:** Compare and contrast cultures and societies globally using socioeconomic and cultural frameworks.
- PLO4:** Articulate and apply ethical values in the diverse-global workplace.
- PLO5:** Develop an entry strategy into other markets recognizing the nature of institutions and forces governing the process of globalization.
- PLO6:** Accomplish an independent, well-defined research and development project under guidance in accordance with professional codes of ethics and norms.
- PLO7:** Communicate professional problems, analyses, and conclusions to specialists as well as to the general public.
- PLO8:** Indicate problem issues within international business and/or innovation and entrepreneurship, analyze these issues, draw conclusions, and disseminate findings in academia and business.

Curriculum - WMGT

Course Code and Title	Credits
General Education Requirements	23
ARAB200 - Arabic Language and Literature	3
BSTA205 - Introduction to Business Statistics	3
CSCI200 - Introduction to Computers	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
LANG225 - Introduction To German	3
WICI200 - Intercultural Issues	4
WULT200 - European Studies	1
Core Requirements	33
BACC200 - Financial Accounting	3
BFIN300 - Business Finance	3
BMGT200 - Introduction to Business Management	3
BMGT300 - Introduction to Business Law	3
BMGT340 - Organizational Behavior	3
BMGT380 - Business Ethics	3
BMIS300 - Management Information Systems	3
BMIS355 - Quantitative Methods of Business Decisions	3
WACC210 - Introduction to International Accounting	2
WACC260 - Basics of International Financial Reporting Standards / International Accounting Standards	2

WECO210 - Basics of International Economics	2
WMGT315 - Leadership Development	2
WMKT300 - Marketing Basics	1
Major Requirements	30
BMGT360 - Research Methods for Business	3
BMGT470 - Total Quality Management	3
BMIS400 - E-Business	3
IMGT390 - Strategic Negotiations	3
WMGT365 - Organization	1
WMGT430 - Basics in International Business Management	4
WMGT490 - Business Strategy and Controlling in International Business	2
WMGT491 - Major Requirement 1	4
WMGT492 - Major Requirement 2	3
WMGT497a - Strategic Management	1
WMGT497b - Internationalization Strategies	1
WMKT400 - Internet Marketing	2
General Education Electives	9
GE***** General Education Electives	6
Major Electives	6
ME***** Major Electives	6

List of Major Electives - WMGT

Course Code and Title	Credits
BACC330 - Intermediate Financial Accounting I	3
BACC370 - Intermediate Financial Accounting II	3
BACC400 - Accounting Information Systems and Applications	3
BACC420 - Tax Accounting	3
BACC430 - Auditing and Fraud Prevention	3
BACC450 - Lebanese Accounting Practices	3
BACC497 - Advanced Accounting	3
BECO305 - Intermediate Microeconomics	3
BECO340 - Intermediate Macroeconomics	3
BECO365 - Growth Models and Policy	3
BECO385 - Econometrics	3
BECO400 - Labor Economics and Market Structures	3
BECO430 - International Economics and Trade	3
BFIN350 - Financial Management	3
BFIN360 - Financial Reporting and Analysis	3
BFIN400 - Financial Modeling	3
BFIN430 - International Banking and Finance	3
BFIN440 - Banking Operations	3
BFIN470 - Financial Markets and Institutions	3
BFIN475 - Financial Investments	3
BHTM305 - Introduction to Hospitality & Tourism Industry	3

BHTM311 - Lodging Management (+Opera)	3
BHTM315 - Business Etiquette & Protocol	3
BHTM340 - Restaurant Management	3
BHTM425 - Food and Beverage Cost Control	3
BHTM445 - Conventions and Meetings Management	3
BHTM495 - Revenue Management	3
BMGT475 - Leadership Principles	3
BMIS310 - Business Telecommunications	3
BMIS320 - Data Management	3
BMIS370 - System Analysis and Design	3
BMIS375 - Programming Fundamentals	3
BMIS480 - Knowledge Management	3
BMIS497 - Business Intelligence Systems	3
BMKT310 - Digital Marketing	3
BMKT315 - Integrated Marketing Communication	3
BMKT350 - Consumer Behavior	3
BMKT360 - Market Research Methods	3
BMKT380 - Strategic Brand Management	3
BMKT420 - Customer Service Management	3
BMKT497 - Retailing & Merchandising Management	3
IMGT430 - International Business Management	3
IMGT497 - Managing Entrepreneurship	3

3.7 Program of Study - Graduate Program

3.7.1 MBA - Master of Business Administration (39 Credits)

About the Program

The Masters of Business Administration (MBA) program is designed for business and non-business graduates. It provides an integrated and comprehensive knowledge of Business and its essential applications necessary to effectively embark in a progressively ambitious, dynamic, and emerging exhaustive business environment.

In the world of internationalism and information, access to information is easy yet requires critical thinking and readiness to cope with the fast-changing world around us. Thus, our primary mission in the MBA program is to equip our students with analytical skills that would enable them to explore and develop professional skills to become effective and responsible global individuals. We aim to prepare our students to use their entrepreneurial and technological acumen to find solutions in an ever-evolving world to succeed and excel in their careers and make a difference in their society.

Domain of Work

Most of the graduates of this program find employment as a(n):

- Chief Executive Officer
- General Manager
- Human Resource Manager
- Finance Manager
- Marketing Manager
- Business Developed Manager
- Strategic Consultant

Program Educational Objectives (PEOs)

The educational objectives of this program are to:

- PEO1:** Demonstrate leadership and problem-solving skills necessary for optimal decision-making.
- PEO2:** Develop strategic business plans.
- PEO3:** Observe and analyze innumerable business-related strengths, weaknesses, opportunities, and threats.
- PEO4:** Evaluate the performance of both employees and the organization.
- PEO5:** Examine and select proper business tools and systems necessary in dynamic business environments.

Program Learning Outcomes (PLOs)

Students will have the ability to:

- PLO1:** Analyze the outcomes of both quantitative and qualitative research methodologies competently to sustain successful business performance.
- PLO2:** Appraise several functional areas and formulate proposals for continuous improvement.
- PLO3:** Identify and select premium business-related communication and presentation skills in an effective manner.
- PLO4:** Deduce ethical and social implications of business choices.
- PLO5:** Distinguish and examine different aspects of a business and its environment.

Curriculum - Concentration Areas:

MBA - Master of Business Administration

Course Code and Title	Credits
Core Requirements	27
BACC525 - Accounting for Managers	3
BECO575 - Economics for Managers	3
BFIN525 - Corporate Finance	3
BHRM575 - Managing Human Resources	3
BMGT525 - Strategic Management & Corporate Governance	3
BMIS575 - Information Systems for Managers	3
BMKT525 - Marketing Management	3
BRMM575 - Business Research Methods	3
BSTA575 - Statistics for Decision Making	3
Major Electives	12
ME**** Major Electives	12

MBAT - Master of Business Administration with Thesis

Course Code and Title	Credits
Core Requirements	27
BACC525 - Accounting for Managers	3
BECO575 - Economics for Managers	3
BFIN525 - Corporate Finance	3
BHRM575 - Managing Human Resources	3
BMGT525 - Strategic Management & Corporate Governance	3
BMIS575 - Information Systems for Managers	3
BMKT525 - Marketing Management	3
BRMM575 - Business Research Methods	3
BSTA575 - Statistics for Decision Making	3
Major Requirements	6
MBA696A - MBA Thesis Part I	3
MBA696B - MBA Thesis Part II	3
Major Electives	6
ME**** Major Electives	6

MAIS - MBA in Accounting Information Systems

Course Code and Title	Credits
Core Requirements	27
BACC525 - Accounting for Managers	3
BECO575 - Economics for Managers	3
BFIN525 - Corporate Finance	3
BHRM575 - Managing Human Resources	3
BMGT525 - Strategic Management & Corporate Governance	3
BMIS575 - Information Systems for Managers	3
BMKT525 - Marketing Management	3
BRMM575 - Business Research Methods	3
BSTA575 - Statistics for Decision Making	3
Major Requirements	6
BACC625 - Advanced Auditing	3
BACC675 - Advanced Financial Accounting	3
Major Electives	6
ME**** Major Electives	6

MECO - MBA in Financial Economics

Course Code and Title	Credits
Core Requirements	27
BACC525 - Accounting for Managers	3
BECO575 - Economics for Managers	3
BFIN525 - Corporate Finance	3
BHRM575 - Managing Human Resources	3
BMGT525 - Strategic Management & Corporate Governance	3
BMIS575 - Information Systems for Managers	3
BMKT525 - Marketing Management	3

BRMM575 - Business Research Methods	3
BSTA575 - Statistics for Decision Making	3
Major Requirements	6
BECO625 - Financial Economics	3
BECO685 - Advanced Financial Econometrics	3
Major Electives	6
ME**** Major Electives	6

MFIN - MBA in Finance

Course Code and Title	Credits
Core Requirements	27
BACC525 - Accounting for Managers	3
BECO575 - Economics for Managers	3
BFIN525 - Corporate Finance	3
BHRM575 - Managing Human Resources	3
BMGT525 - Strategic Management & Corporate Governance	3
BMIS575 - Information Systems for Managers	3
BMKT525 - Marketing Management	3
BRMM575 - Business Research Methods	3
BSTA575 - Statistics for Decision Making	3
Major Requirements	6
BFIN650 - Financial Strategy	3
BFIN685 - Investments and Portfolio Management	3
Major Electives	6
ME**** Major Electives	6

MHRM - MBA in Human Resources Management

Course Code and Title	Credits
Core Requirements	27
BACC525 - Accounting for Managers	3
BECO575 - Economics for Managers	3
BFIN525 - Corporate Finance	3
BHRM575 - Managing Human Resources	3
BMGT525 - Strategic Management & Corporate Governance	3
BMIS575 - Information Systems for Managers	3
BMKT525 - Marketing Management	3
BRMM575 - Business Research Methods	3
BSTA575 - Statistics for Decision Making	3
Major Requirements	6
BHRM625 - Employee Benefits and Compensation	3
BHRM675 - Training, Development and Performance	3
Major Electives	6
ME**** Major Electives	6

MHTM - MBA in Hospitality and Tourism Management

Course Code and Title	Credits
Core Requirements	27
BACC525 - Accounting for Managers	3
BECO575 - Economics for Managers	3
BFIN525 - Corporate Finance	3
BHRM575 - Managing Human Resources	3
BMGT525 - Strategic Management & Corporate Governance	3
BMIS575 - Information Systems for Managers	3
BMKT525 - Marketing Management	3
BRMM575 - Business Research Methods	3
BSTA575 - Statistics for Decision Making	3
Major Requirements	6
BHTM625 - Managing Tourism Services	3
BHTM675 - Entrepreneurship in Tourism	3
Major Electives	6
ME**** Major Electives	6

3.7.2 WMBA - WORMS MBA in Management (56 Credits)

About the Program

The WORMS Master of Business Administration (WMBA) program is an exchange program between LIU (Lebanon) and WORMS (Germany) and is designed for business and non-business graduates. This program provides an integrated and comprehensive knowledge of Business and its essential applications necessary to effectively embark in a progressively ambitious, dynamic, and emerging exhaustive business environment. In addition, graduates from this program would finish with a dual degree in MBA from both universities (LIU and WORMS).

In the world of internationalism and information, access to information is easy yet requires critical thinking and readiness to cope with the fast-changing world around us. Thus, our primary mission in the WMBA program is to equip our students with analytical skills that would enable them to explore and develop professional skills to become effective and responsible global individuals.

WORMS program not only prepares our students to be international entrepreneurs but also opens opportunities for them via the exchange program to explore their options in Germany, Europe, and the international world.

Domain of Work

Most of the graduates of this program find employment as a (n):

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|---|---|
| <input type="checkbox"/> International Business Development Manager | <input type="checkbox"/> Finance Manager |
| <input type="checkbox"/> Chief Executive Officer | <input type="checkbox"/> Marketing Manager |
| <input type="checkbox"/> General Manager | <input type="checkbox"/> Business Developed Manager |
| <input type="checkbox"/> Human Resource Manager | <input type="checkbox"/> Strategic Consultant |

Program Educational Objectives (PEOs)

The educational objectives of this program are to:

- PEO1:** Demonstrate leadership and problem-solving skills necessary for optimal decision-making.
- PEO2:** Develop strategic business plans.
- PEO3:** Observe and analyze innumerable business-related strengths, weaknesses, opportunities, and threats.
- PEO4:** Evaluate the performance of both employees and the organization.
- PEO5:** Examine and select proper business tools and systems necessary in dynamic business environments.

Program Learning Outcomes (PLOs)

Students will have the ability to:

- PLO1:** Analyze the outcomes of both quantitative and qualitative research methodologies competently to sustain successful business performance.
- PLO2:** Appraise several functional areas and formulate proposals for continuous improvement.
- PLO3:** Identify and select premium business-related communication and presentation skills in an effective manner.
- PLO4:** Deduce ethical and social implications of business choices.
- PLO5:** Distinguish and examine different aspects of a business and its environment.

Curriculum - WMBA

Course Code and Title	Credits
Core Requirements	21
BACC525 - Accounting for Managers	3
BECO575 - Economics for Managers	3
BFIN525 - Corporate Finance	3
BHRM575 - Managing Human Resources	3
BMGT525 - Strategic Management & Corporate Governance	3
BMKT525 - Marketing Management	3
BRMM575 - Business Research Methods	3
Major Requirements	12
WMGT691 - Major Requirement 1	4
WMGT692 - Major Requirement 2	4
WMGT693 - Major Requirement 3	4
Major Electives	23
WACC640 - Advanced International Accounting	3
WMGT640 - Dynamic Strategy & Strategic Renewal	2
WMGT650 - Crafting Strategy	2
WMGT655 - Strategic Planning	4
WMGT665 - Managing Corporate Distress	3
WMKT640 - Distribution Management	5
WMKT650 - Strategic Sourcing & Retail Procurement	2
WMKT655 - Retail Strategy	2

3.8 General Education Electives - School of Business

Course Code and Title	Credits		
AGRS235 - Landscape Horticulture	3	LANG225 - Introduction To German	3
ARAB220 - Creative Writing in Arabic	3	LANG227 - Introduction To Chinese	3
ARTS200 - Foundation Drawing I	3	LANG228 - Introduction To Persian	3
ARTS204 - Introduction to Theater	3	LANG229 - Introduction to Turkish	3
ARTS350 - Photography	3	LANG230 - Sign Language	3
ARTS390 - Mosaic I	3	LANG300 - Intermediate Russian	3
BHTM375 - International Cuisine	3	NSCI200 - The Universe and the Earth	3
BMED210 - Introduction to Community Health	3	NSCI210 - Biodiversity and the Evolution of Life	3
COMM200 - Introduction to Communication Studies	3	NSCI270 - Environmental Ethics	3
COMM255 - Theories of Mass Media	3	NUTR200 - Nutrition and Health	3
CULT210 - New World Order	3	PHED200 - Sports and Health	3
EDUC201 - Foundation of Education	3	PHIL200 - Introduction to Philosophy	3
ENVR200 - Environmental Science	3	PHIL205 - Introduction to Ethics	3
ENVR205 - Environment & Health	3	PHIL210 - World Religions	3
ENVR320 - Global Health Challenges	3	POLS200 - Introduction to Political Sciences	3
FREN200 - Elementary French	3	POLS205 - World Current Affairs	3
HIST200 - Modern Japan	3	POLS215 - Modern Arab Political Thought	3
HIST205 - Modern China	3	POLS230 - Lebanese Labor Law	3
HIST245 - Modern Africa	3	POLS300 - Lebanese Politics	3
HIST250 - Europe in the Twentieth Century	3	POLS316 - Politics of Modern Syria	3
HIST255 - International Relations in East Asia Since 1945	3	POLS440 - The Arab Israeli Conflict	3
HIST260 - Modern Spain	3	RATV200 - Short Film Making	3
HIST270 - Modern Latin America	3	SES201 - Soft & Entrepreneurship Skills Development	3
HIST350 - Contemporary World History	3	SPAN250 - Spanish level 2	3
HUMN200 - Community Service	3	SSCI200 - Introduction to Sociology	3
HUMN210 - Human Rights - Global Perspective	3	SSCI205 - Introduction to Psychology	3
HUMN215 - Introduction to Civic Society	3	SSCI210 - International Politics	3
INET01 - Innovative and Entrepreneurship Startup Essentials	3	SSCI215 - Introduction to Music	3
LANG200 - Beginners Russian	3	SSCI220 - Introduction to Anthropology	3
LANG201 - Beginners Hebrew	3	SSCI225 - Introduction to Cultural Anthropology	3
LANG212 - Conversational Hebrew	3	SSCI235 - The Individual and Modernity	3
LANG221 - Introduction To Italian	3	SSCI250 - The Cultural Landscape	3
LANG222 - Introduction To French	3	SSCI255 - Intellectual History of the Twentieth Century	3
LANG223 - Introduction To Spanish	3	SSCI265 - Geography of the Islamic World	3
LANG224 - Introduction To Deutsch	3	SSCI285 - Gender and Global Issues	3
		SSCI310 - Foundations of the Social Sciences	3
		SSCI400 - Global Understanding	3

3.9 Course Description - School of Business

3.9.1 Undergraduate Courses

BACC200 Financial Accounting (3 Credits)

The course introduces the basic framework of accounting; it covers the basics of financial accounting from the accounting cycle through the presentation of financial statements. The course prepares the students to be capable of performing the different steps of the accounting cycle for service and merchandising businesses.

BACC360 Managerial Accounting (3 Credits)

The course tackles the managerial use of accounting data to plan and control personnel and operations within a firm. Students will understand how accounting systems can provide information and data for managerial decision-making and influence management decisions. Students will master accounting analysis and will learn how to approach business problems with a management perspective. This course covers basic cost accounting and managerial accounting concepts. Topics include: the distinction between financial accounting, managerial accounting and cost accounting, basic cost concepts, job order and process costing, activity-based costing, cost-volume-profit analysis, incremental analysis, and decision making as well as pricing and budgeting.

BACC330 Intermediate Financial Accounting I (3 Credits)

The course includes discussions of the conceptual framework of financial accounting including its principles, assumptions, and constraints. Emphasis is placed on the recording procedures in the corporations, in addition to the reporting of Income Statement and Balance Sheet. Also, it focuses on reporting of cash and its equivalents, receivables, current liabilities, and other special accounting topics.

BACC370 Intermediate Financial Accounting II (3 Credits)

The course is a continuation of the study of financial accounting with a concentration on the reporting of the stockholders' equity accounts of the Balance Sheet and the preparation and analysis of the Statement of Cash Flows. The course includes the study of the accounting for inventory, fixed assets, and long-term liabilities. Also, the course provides information relating to revenue recognition.

BACC400 Accounting Information Systems and Applications (3 Credits)

The course examines system design concepts and methods including an understanding of basic control structures. Covers specific accounting cycles and computerized transaction processing systems. Analyzed controls for manual and computerized systems including database systems.

BACC420 Tax Accounting (3 Credits)

This course is primarily designed to provide the students with a fundamental understanding of federal income taxation and income tax concepts of business entities and individuals. Topics will include the income sources, income exclusions, the requirements for various tax deductions, and business expenses.

BACC430 Auditing and Fraud Prevention (3 Credits)

The course is a study of external, governmental, and internal auditing, professional ethics, other attestation standards and specific companies and industries. It includes financial, operational and compliance auditing and audit risk assessments and techniques.

BACC450 Lebanese Accounting Practices (3 Credits)

This course will constitute an introduction to the fundamentals concepts of accounting as practiced and applied by Lebanese certified public accountants. Students will examine the Lebanese general accounting plan as prescribed by the Lebanese law. They will learn how to journalize the most common types of transactions that can incur during a normal course of business with emphasis on VAT entries. Students will have lab application allowing them to learn some Tax Declaration Systems used in Lebanon by accountants. In addition, this course will spotlight on the social security concept and the different related calculations and registrations along with a lab application.

BACC497 Advanced Accounting (3 Credits)

The course mainly discusses the consolidation procedures including proper assignment, depreciation, and amortization of any difference between cost and book values and non-controlling interest disclosures. The student will be able to properly prepare consolidated financial statements and demonstrate an understanding of current GAAP related to business combinations and its relationship to present reporting practices. Also, the student will prepare and analyze accounts for importing and exporting transactions denominated in foreign currencies, as well as accounting for forward exchange contracts. Topics include Business combinations, equity method, cost method, consolidation of financial statement at date of acquisition and foreign currency transactions.

BECO210 Introduction to Microeconomics (3 Credits)

This course is designed to introduce students to the basic methods and techniques that allow the micro units to make a proper choice, given scarcity. In this course, students are expected to learn how to calculate opportunity costs, determine comparative advantage, understand the theory of demand and supply, calculate equilibrium price and quantity, relate elasticity to total revenue, decide on the bundle of goods that maximizes consumers' total utility, determine several costs, and differentiate between two extreme markets: perfect competition and monopoly.

BECO260 Introduction to Macroeconomics (3 Credits)

This course is designed to provide students with the foundations for understanding key economic indicators influencing the behavior of the economy as a whole. In this course students learn to calculate the nation's output (GDP), the unemployment rate and the price level, understand the Classical and the Keynesian models and analyze the effects of fiscal and monetary policies.

BECO305 Intermediate Microeconomics (3 Credits)

This course is designed to provide students with a thorough grounding in Microeconomics theories. The course extends the principles' discussions and introduces some algebra and calculus notations to solve optimization problems. In this course, the theory of supply and demand is discussed with applications. The consumer choice theory is presented with profound analysis, and the firm's theory is discussed comprehensively.

BECO340 Intermediate Macroeconomics (3 Credits)

This course is designed to provide students with thorough grounding in Macroeconomics theories. The course presents the basic classical model of national income, analyzes the open economy model, and introduces the model of aggregate supply and aggregate demand as well as the role of stabilization policy. It presents the Keynesian cross and the theory of liquidity preference and uses them as building blocks for developing the IS-LM model.

BECO365 Growth Models and Policy (3 Credits)

This course is designed to introduce students to the models of economic growth. In this course, students are expected to comprehensively examine the Solow-Swan model; analyze the role of physical capital, population, human capital, and technology. Students are also expected to analyze the effects of government policies on growth.

BECO385 Econometrics (3 Credits)

This course is designed to introduce students to the basic econometric theory. It presents the statistical and mathematical techniques needed to perform econometrics analysis. In this course students are expected to understand the classical linear regression model with simple and multiple variables, to derive regression estimators and to analyze the problems of estimation and inference.

BECO400 Labor Economics and Market Structures (3 Credits)

This course is designed to develop the modern theory of labor market behavior and to analyze pricing in different market structures. In this course students are expected to examine the theories of wage determination, to determine pricing in different markets; perfect competition, monopolistic competition, monopoly, and oligopoly, and to understand the game theory.

BECO430 International Economics and Trade (3 Credits)

This course is designed to provide students with the basic principles of international economics and trade. In this course, students are expected to understand comparative and absolute advantage, and to distinguish between free trade and protectionism. Throughout the course, students will develop a thorough understanding of the Micro and Macro theories, economic integration, trade patterns, international price adjustments, and international policies that are useful in guiding firms while performing businesses abroad.

BFIN300 Business Finance (3 Credits)

The course focuses on the principles of finance and their application in business corporations, with the main objective of maximizing shareholders wealth. Topics include discounted cash flow analysis, the various uses of funds, valuation models, management of working capital, cost of capital, capital budgeting, long term financing and dividend policy.

BFIN350 Financial Management (3 Credits)

The course is a comprehensive, up-to-date, and highly understandable introduction to Financial Management. It aims at presenting the theories and the applications of Corporate Finance and focuses on the principal roles of the financial manager: the funding policy and the investing policy. The course integrates classical and modern concepts with a rich collection of contemporary real-word examples and cases. In so doing, it makes the theories approachable and understandable.

BFIN360 Financial Reporting and Analysis (3 Credits)

The course provides a user's perspective on the role of accounting and financial statements in capturing and conveying economic information about an enterprise. Through a mix of lectures, case studies and exercises, participants will acquire confidence in using the concepts and vocabulary of accounting to analyze and communicate about business performance and resource allocation. They will become familiar with the format and use of financial statements, and the role of accounting in making organizational decisions. This course improves the student's ability to translate a financial statement into a meaningful map for business decisions.

BFIN400 Financial Modeling (3 Credits)

This course introduces the principles and techniques for building financial models in Excel. It integrates financial, accounting, and statistical concepts and techniques to construct financial models and to perform analysis.

BFIN430 International Banking and Finance (3 Credits)

Due to globalization and increased economic interdependence, business can no longer remain competitive without cross national boundaries. The internationalization of business expands the horizons of traditional corporate finance and imposes new financial challenges. Such new challenges are the subject of this course. International Banking and Finance focuses on the financial decision of the Multinational Corporation (MNC). This focus includes topics such as international trade, international financial markets, financial derivatives, foreign investments, and exchange rate risk management.

BFIN440 Banking Operations (3 Credits)

This course focuses on the management of commercial banks' operations. It offers students with a description and analysis of those operations. It also covers the techniques and tools commercial bank managers apply to perform their job. The purpose of this course is to examine various aspects of managing a commercial bank. If one can manage a commercial bank, the same skills and knowledge should apply to other types of financial institutions as well. However, the course is not designed to train bank managers. It is designed to cover topics that bank managers, investors, borrowers, lenders, and academics should know. The emphasis in this course is the practical application of financial theories and tools to the management of commercial banks and other types of financial institutions. Topics include the structure of banks, lending policies, asset and liability management, risk management, and capital adequacy.

BFIN470 Financial Markets and Institutions (3 Credits)

This course explores various aspects of financial markets and institutions and provides a comprehensive introduction to the diversified services offered by those institutions. It addresses the importance of interest rates as a major determinant of financial markets behavior, and it provides an overview of the causes of financial markets crises.

BFIN475 Financial Investments (3 Credits)

This course is designed to provide an understanding on the field of investment, through providing the theoretical concepts and the techniques of investing. The course focuses on understanding what investment opportunities are, making good investment decisions, recognizing where investment problems and controversies arise, and knowing how to deal with them. This course provides students with an understanding of capital markets securities, operations, valuation, and investment techniques. Specifically, the course covers definitions of various investment vehicles, operation of the NASDAQ markets, portfolio theory, valuation of stocks and bonds, and investor capital allocation decisions, including discussions of mutual fund selection.

BHTM305 Introduction to Hospitality & Tourism Industry (3 Credits)

The course constitutes the first step to become a hospitality student. It offers an overview of one of the largest industries in the world. The first step is to dispel the myth that hospitality management is only hotels and restaurants. It is also airlines, cruises, catering, and event planning (just to name few). The course does not only provide better understanding of hospitality but also ensures gaining useful skills.

BHTM311 Lodging Management (+Opera) (3 Credits)

The course focuses on the concepts of organization, communication, ethics, and policy formulation in hotels with emphasis on the front office. It introduces the basic techniques and trends in systems and equipment available to meet the needs of management and guests.

BHTM315 Business Etiquette & Protocol (3 Credits)

Job success is based mostly on soft skills besides the technical knowledge. The course will be a guide for the students to interact effectively with colleagues, customers, and business associates and learn the necessary social skills to ensure personal and professional success. The course includes the most critical areas that can help people succeed in climbing up the corporate ladder. From the basics of getting off on the right foot during the job interview to handling office politics to dining etiquette, it covers everything today's businessperson needs to know how to navigate the tricky world of etiquette. Topics to be covered 1- Job Interview Etiquette 2- Business Dress and Grooming 3- Social sensitivity 4- Electronic Communication Etiquette 5- Manners for special occasions 6- Dining etiquette 7- Meeting etiquette 8- Business entertaining 9- Presentations 10- Travel etiquette 11- Global manners / International Business.

BHTM340 Restaurant Management (3 Credits)

The course concentrates on the comprehensive study of restaurant management. Students examine the complex and integrated nature of restaurant management. The course aims at preparing students to apply sound management principles to situations encountered within restaurant management.

BHTM425 Food and Beverage Cost Control (3 Credits)

The course enables the students to become well familiarized with the theory and practice of internal cost control in the hospitality industry. Students will learn the importance of quality assurance versus cost impact on profitability management. Case studies constitute a major source of learning.

BHTM445 Conventions and Meetings Management (3 Credits)

The course is an introduction to the environment and characteristics of the meetings, conventions, and exhibitions segments of the hospitality industry. The course emphasizes on managerial decisions involved in targeting, planning, organizing, selling, and servicing activities in the hospitality and tourism industry.

BHTM495 Revenue Management (3 Credits)

This course aims to broaden an understanding of Revenue Management in the Hospitality and Tourism fields. Tourism is a perishable, intangible and variable service. Therefore, careful management is required to reach customer satisfaction and maximum revenue. Revenue Management started with the Airline Industry. However, today many more industries use Revenue Management such as Hotels, Car rental, Train companies and entertainment companies. Revenue management course helps to predict consumer demand to optimize inventory and price availability in order to maximize revenue growth. This course will allow the students to understand and contribute to the revenue decisions made in hospitality and tourism services. Additionally, the course will teach the students to gather information about the market, be proactive and use the information to divide the market and adjust the products through distribution, to the right customer at the right time and at the right price. The Course content is structured around theories and case examples, giving the student the experience to translate theory into practice. Upon the completion of this course the student will have the skills to apply pricing strategies, use strategies to generate revenue through correct application, and make correct decisions in order to optimize revenue.

BMGT200 Introduction to Business Management (3 Credits)

The course vividly illustrates management theories by incorporating real-life perspectives from a myriad of managers on their greatest challenges and successes. The course focuses on:

- How organizations operate in an era of rapid change.
- The factors that determine how managers can operate effectively.
- A comprehensive, up-to-date, and highly understandable introduction to management theory, research, and practice.
- Classical and modern concepts with a rich collection of contemporary real-world examples and cases.
- Ideas, information, and activities that can help students to understand more easily and practice more effectively the basic managerial functions.

BMGT300 Introduction to Business Law (3 Credits)

The study of the legal environment of business is of paramount importance due to its universal applicability. Students entering any field of business must have at least the minimal understanding of business law to function in the real world.

This course focuses on:

- Fundamental relationship between law and business.
- The knowledge of contracts, negotiable instruments, and different company's laws.
- The Lebanese Commercial Law and its applications in the Lebanese judicial system.

BMGT315 Human Resource Management (3 Credits)

Human Resource Management is the most remarkable area in the field of business. Among all resources available to the business world, human capital remains the only resource that cannot be duplicated. Companies are just realizing the value of managing this resource efficiently and effectively. Although people are difficult to manage, they can change and adapt to give organizations added value. This course introduces students to some tools that elicit a change in employee behavior and support organizations to effectively manage this important asset. It helps them identify the core competencies that organizations today search for in their "employees of choice". The course develops a critical understanding of the role and functions of the various human resource activities in an organization, providing students with a comprehensive review of key HRM concepts, techniques, and issues.

BMGT340 Organizational Behavior (3 Credits)

This course allows the students to study the behavior of individuals and groups as part of the social and technical system in the workplace. They examine individual and group behavior, communication, conflict and various management styles, motivational techniques and coordination in the work environment and apply these concepts to the development of an organization's human resources. Organizational behavior (OB) highlights the significance of challenges and opportunities of OB, perception, attribution, learning, organizational change, organizational culture, engagement, leadership, and conflict management.

BMGT360 Research Methods for Business (3 Credits)

Research projects are immensely required by the vast majority of business analysts, managers, and other professionals to ensure optimal decision-making. From that perspective, analysts and key decision makers should possess necessary knowledge with regards to business research and its methodologies.

This course discloses the importance of research in business and its contribution towards professional decision-making. It introduces students to the main required concepts in conducting research, covering all needed principal stages, essential terminologies, processes, and methodologies that are vital in reporting and explaining the research-findings.

BMGT380 Business Ethics (3 Credits)

Helping you to think about ethics in business is the main purpose of the course. The course will help you identify and analyze ethical issues in business and give you some decision-making tools. Whether you are an employer, an employee, a client, a shareholder, or a community resident, good and bad business ethics have an impact on your life. The content of this course is important to you. How much you gain from this course depends on how actively you participate. You will be involved in classroom discussion groups, debates, case analysis, readings, and other activities, many of which will require advance preparation on your part. Further, we will examine issues and conflicts that typically arise in business that have moral aspects to them, such as the way employers treat their employees, and the ways businesses treat their competitors, customers, society, government, and environment. In the last weeks of the course, you will be in charge of the class during the presentation of your project. Your participation in these activities will significantly increase your understanding of the course and will surely affect your business career in a positive way.

BMGT470 Total Quality Management (3 Credits)

The main objective of this course is to introduce the philosophy of total quality management (TQM) in terms of concepts, theories, tools, and processes. The course presents the different functional perspectives on quality and integrates it with the global supply chain and international quality standards. In addition, this course aims to introduce the different methods used to fill in the gap between the customers' perceptions and expectations through an innovative and continuous improvement processes.

BMGT475 Leadership Principles (3 Credits)

This course studies leadership styles, skills, roles, and functions of leaders of organizations. Students will gain a broad understanding of the origins of leadership, theoretical approaches to leadership, and ethical issues facing contemporary leaders. Students will also develop a personal philosophy of leadership, and an awareness of one's own style of leadership. Leadership Principles is designed to help new and aspiring leaders unleash the potential in themselves and others and cultivate high-performing teams. Become a more versatile leader who can mobilize others by immersing yourself in real-world leadership challenges, self-assessments, and 360-degree feedback from colleagues and peers.

BMIS300 Management Information Systems (3 Credits)

The course provides an overview of management information systems (MIS) within a business context with emphasis on end-user computing. It covers MIS theory and practice as they relate to management and organization theories; current trends in MIS; managerial usage of information systems; computer hardware, software, and telecommunications; information systems for marketing; finance, accounting, and other business areas; systems development process; and the role of microcomputers. It also provides experiential learning by exposure to various decision-support tools for microcomputers.

BMIS310 Business Telecommunications (3 Credits)

The course introduces students to a wide range of telecommunications technologies, including local area networks, wide area networks and the Internet, as well as to the uses of these technologies in the organization. Topics include the benefits, costs, and risks of using computer networks, network design issues, and special considerations for network applications. The course requires routine use of campus network and software to aid in network design and evaluation. Simulation and optimization are used as tools for network design and evaluation.

BMIS320 Data Management (3 Credits)

The course is designed to improve students' understanding, and develop their skills, in the design and implementation of business databases using modern database management systems. It covers data structures and the conceptual, logical, and physical design of databases, as well as database implementation and general issues in business data management.

BMIS355 Quantitative Methods of Business Decisions (3 Credits)

The course surveys the philosophy, techniques, and applications of operations research to managerial decision making. It is designed primarily for students not majoring in management science or statistics. Techniques covered include linear programming, transportation and assignment models, Markov processes, inventory and queuing models. Emphasis is placed on formulating and solving decision problems in the functional areas of management.

BMIS360 Operations Management (3 Credits)

It has been demonstrated by leading firms that operations management can be an effective weapon to penetrate into the global market. The course topics include inventory management, aggregate planning, material requirement planning, master production schedule, and scheduling and managing complex projects.

BMIS375 Programming Fundamentals (3 Credits)

The "Programming Fundamentals" course is an introduction to the Python programming language for students without prior programming experience. Students are introduced to core programming concepts like data structures, conditionals, loops, variables, and functions. This course provides hands-on coding exercises using commonly used data structures, writing custom functions, and reading and writing to files. The concepts presented in the course are reinforced by practice through lab exercises. After completing this course, students will immediately be able to use Python to complete tasks in the real world.

BMIS370 System Analysis and Design (3 Credits)

The course focuses on the analysis of an organization and the subsequent design of computer systems to meet business requirements being the heart of the computer information systems (CIS) field. This course covers the phases from information systems planning through the specification of structured system requirements in functional form (i.e., logical system design) and concentrates on methods, techniques, and tools used to determine information requirements and to document these requirements in a thorough and unambiguous form. It also introduces computer-aided software engineering (CASE) technology. Students learn the discipline of systems analysis and logical design through a hypothetical case situation.

BMIS400 E-Business (3 Credits)

This course provides an overview of e-commerce from both technological and managerial perspectives. It introduces e-commerce frameworks, and technological foundations; and examines basic concepts such as strategic formulation for e-commerce enterprises, management of their capital structures and public policy. This course is designed to familiarize students with current and emerging electronic commerce technologies using the Internet. Topics include Internet technology for business advantage, managing electronic commerce funds transfer, reinventing the future of business through electronic commerce, business opportunities in electronic commerce, electronic commerce Web site design, and social, political, and ethical issues associated with electronic commerce, and business plans for technology ventures.

BMIS480 Knowledge Management (3 Credits)

People change the world; books pave the way. The primary objective of this course is to acquire familiarity with today's knowledge organization and knowledge workers. The focus is on knowledge sharing and how today business uses knowledge for competitive advantage. More specifically, the course is about how to capture knowledge, how to share it, how to transfer it, and how to manage it. Logic and reasoning are heavily emphasized.

BMIS497 Business Intelligence Systems (3 Credits)

Organizations rely on computer-based information systems for capturing, analyzing, and distributing the information required to develop, implement, and evaluate corporate strategies in all functional areas. Managing data as a corporate resource requires a deep understanding of business processes and of the underlying structure of the data needed to support them. Business Intelligence is a set of methodologies, processes, architectures, and technologies that transform raw data into meaningful and useful information for more effective strategic, tactical, and operational insights and decision-making. When using this definition, business intelligence also includes technologies such as data integration, data quality, data warehousing, master data management, text and content analytics, and many others that the market sometimes lumps into the information management segment. That is, we refer to data preparation and data usage as two separate but closely linked segments of the business intelligence architectural stack. Business intelligence refers to the process of capturing and storing needed data in a data warehouse and utilizing appropriate tools that enable that data to be transformed into useful information to support managerial decision-making. The focus of this course is on concepts central to the management of data resources and the development of business intelligence capabilities. There is a mixture of theoretical and practical topics including case studies and a significant hands-on component. No prior knowledge of database or business intelligence technologies is assumed.

BMKT300 Marketing Theory and Principles (3 Credits)

The course introduces the concepts and principles of marketing, including the marketing of service and nonprofit organizations. Topics cover the marketing concepts, including relationship marketing, product development, pricing, promotion, marketing research, consumer behavior, international marketing, distribution, and internal marketing to employees. Practical case studies and research work constitute an integral part of the learning methodology.

BMKT310 Digital Marketing (3 Credits)

In the face of internet revolution, marketing communications today increasingly occur as a kind of personal dialogue between the company and its customers who can now play a much more participatory role in the marketing process. This course will cover specific frameworks for analyzing key aspects of digital marketing and how to create effective digital marketing strategies along with techniques and tools for devising corresponding digital marketing programs from social media display ads (Facebook, Instagram) to Email Marketing, Search Engine Optimization, Google AdWords, Google Analytics and Mobile Marketing. The course is designed to get you to think like a digital marketing professional, and to give you experience with industry-relevant hands-on-assignments and exercises.

BMKT315 Integrated Marketing Communication (3 Credits)

The course highlights the importance of the role of sales promotions in the marketing mix and emphasizes the dynamics of sales promotional activity. Students explore the issues of pricing, profitability, consumer response, reactions of retailers, and the nature of specific kinds of promotions including the role of database marketing. The course is useful to students who plan to work in the consumer field, to brand managers, and to managers of distribution and sales activity.

BMKT350 Consumer Behavior (3 Credits)

The course provides an overview of current knowledge about consumer behavior. Basic behavioral science and specific techniques used in marketing practice are covered. Course topics include focus group interviews and qualitative research, demographic analysis, sensory and perceptual analysis, attitude analysis, and psychographics. The learning approach is not mathematical, but technical. The course is directed at students preparing for positions in brand management, advertising, and marketing research.

BMKT360 Market Research Methods (3 Credits)

This course focuses on the gathering of marketing-related data from individuals and organizations, with particular emphasis on integrating problem formulation, research design, questionnaire construction, and sampling so as to yield the most valuable information. The course covers the proper use of statistical methods and the use of computers for data analysis.

BMKT380 Strategic Brand Management (3 Credits)

Building and effectively maintaining brand equity is among the top priorities of high performing companies. Effective brand-building and brand management drives superior financial results, consumer loyalty and competitive advantage. Strategic brand management is the discipline that links strategic business objectives, marketing, and operations, and is the design and implementation of marketing programs and activities to build, measure, and manage brand equity. High performance companies understand the importance of their brand and actively manage brand equity, where a brand name, and its associated brand equity, is one of the most valuable assets any firm has. This course will address the importance of brands, what they represent to customers, and what should be done by organizations to manage them properly and will provide students with insights into how profitable brand strategies can be created. The concept of brand equity is the main focus and provides students with a valuable perspective, and a common denominator to interpret the potential effects and trade-offs of various strategies and tactics for brands. By giving the students the foundation, the course and the textbook allow for the broad exploration of important branding decisions faced by organizations in order to increase student understanding of the important issues in planning, implementing and evaluating brand strategies, to provide relevant theories, models and tools for the making of brand decisions, and to provide a forum for students to apply these principles by providing a comprehensive and up-to-date treatment of the subjects of brands, brand equity, and strategic brand management.

BMKT420 Customer Service Management (3 Credits)

The course focuses on customer services accompanying a core product and service products themselves. It analyzes problems and issues related to service mix, service-level decisions, formulation of service policies, customer service management, development, training, and evaluation of customer service staff. Discussion covers customer information, customer surveys and suggestions, handling of complaints and adjustments, techniques for dealing with difficult and angry customers, dissemination of information, and the development of new programs.

BMKT497 Retailing & Merchandising Management (3 Credits)

Retailers are at the end of the supply chain. They are the final link between the manufacturer and the end consumer. Retail establishments are often called shops or stores. The increased number of options for purchasing a huge number of products illustrates the high intensity of retail competition in today's challenging economy. So, one of the most valuable assets a small retailer should have is its ability to be quick in understanding, learning, and adapting to the constant rapid changes in the market. Retailing and Merchandising Management provides students with a general overview to the art of retail management, whose one of its basic features is to establish good relationships with manufacturers, who will provide the goods and services that are ultimately sold by the retailer, and consumers, who will purchase them. It will expose the student to the process of determining what products will be sold at the retail establishment, how prices are set and negotiated, and how delivery of these goods is arranged. In addition, it familiarizes students with the way retailers set clear and definite strategic plans to enter the market and increase their probability in attaining and sustaining a certain competitive advantage amid their rivals.

BMTH210 Business and Managerial Math (3 Credits)

This course is designed to provide students with basic math skills useful in solving economics and business real-life problems. In this course, students learn to calculate the slope of a linear function, graph and solve non-linear functions, calculate arithmetic and geometric sequences and series, perform several operations including differentiation, partial derivatives, integration, and solve differential equations and matrices.

BSTA205 Introduction to Business Statistics (3 Credits)

This course is designed to provide students with an introductory survey of many applications of descriptive statistics. In this course, students are expected to classify and graphically present data among different measurement levels. They are also expected to calculate measures of location and dispersion, understand the basic probability concepts, and examine discrete and continuous probability distributions.

IMGT390 Strategic Negotiations (3 Credits)

This course will help students to learn some practical negotiation techniques and strategies, and to plan their negotiations to give them the greatest chance of success. Covering the principles, the preparation, and the practice of negotiating skills the course combines theory with practical activities and scenarios, which will help students put what they learn into practice. Strategic negotiations equip students with the skills to close deals that might otherwise be deadlocked, maximize value in the agreements they reach, and resolve differences before they escalate into costly conflicts.

IMGT430 International Business Management (3 Credits)

The course is designed in such a way as to supply the students with the necessary knowledge regarding the world's marketplace in which any business operates while focusing on the political, economic, social, technological, cultural, and legal factors that might influence any international corporation. It sheds the light on some theories that manage international business in addition to some insights on the modes of conducting international business taking into consideration the managerial functions.

IMGT490 Global Strategic Management (3 Credits)

The purpose of this course is to assist the undergraduate student in developing the necessary analytical abilities, attitudes and decision-making skills required of the business manager in a changing environment. Students will gain experience in the application of various tools and disciplines in the solution of managerial problems. In addition, they will get exposed to the latest concepts needed to effectively formulate and efficiently implement a strategic plan. This course follows the fundamental sequence of strategy formulation, implementation, and evaluation. Students will acquire judgment with respect to when and how the various tools and analytical techniques should be applied.

IMGT497 Managing Entrepreneurship (3 Credits)

The course addresses the unique entrepreneurial experience of conceiving, evaluating, creating, managing, and potentially selling a small business. It provides the students with a solid overview of key business areas of management, marketing, and finance, which aims at both solidifying the students' background and growing their critical thinking skills. To link the course with realism, students go over the theoretic process of creating a feasibility study and building a business plan for a small business they might wish to launch.

WACC210 Introduction to International Accounting (3 Credits)

The purpose of this course is to provide students with some background on international accounting and financial reporting. It is not a technical accounting course and will be suitable for non-accounting students, provided that they have completed an introductory course in financial accounting and finance and have some familiarity with corporate financial statements.

WACC260 Basics of International Financial Reporting Standards/International Accounting Standards (2 Credits)

The purpose of the course is to cover the following: 1. Internationalization of German accounting standards 2. Institutional framework of IFRS accounting 3. Framework 4. Presentation of Financial statements 5. Accounting of tangible assets 6. Accounting of intangible assets 7. Accounting of inventories and construction contracts 8. Accounting of provisions 9. Accounting of deferred taxes 10. Accounting of leases.

WECO210 Basics of International Economics (2 Credits)

The course focuses on the basics of microeconomics, which includes the market behavior of firms and the market behavior of private households. Moreover, the course also covers the basics of macroeconomics, including macroeconomic accounting and money, inflation, and income distribution.

WMGT315 Leadership Development (2 Credits)

The course focuses on the different leadership approaches and leadership theories (scientific-theoretical background, derived leadership approaches, Ohio leadership studies, Johari window). The course also discusses some leadership tools (conferences and team meetings/group dynamics/role models, reports and presentations, personal work techniques, performance appraisal and feedback).

WMGT365 Organization (1 Credit)

This course helps the students to acquire knowledge of organization as a tool and as a management task; moreover, the course gives an overview of organization approaches, theory, and tools.

WMGT430 Basics in International Business Management (4 Credits)

Students understand the basic principles of business management in an international context as well as the functions of a company and the relationship between the different fields of business and selected functions.

WMGT490 Business Strategy and Controlling in International Business (2 Credits)

This course is an integrative problem-solving course focusing on top management and the total organization and requiring students to address issues related to strategy formulation and control in a global economy. The course utilizes a case method approach that requires students to analyze a company's situation and recommend a company-wide strategy to improve competitiveness and bottom-line performance.

WMGT497a Strategic Management (1 Credit)

This course covers the following: I. Strategic management: Approaches and leadership concepts, models, tasks, contents, strategic planning as heart of strategic management, instruments of strategic management. II. Strategic management as risk-conscious, anticipative corporate management: Analysis, forecast, strategic early recognition, crisis management, and business continuity management.

WMGT497b Internationalization Strategies (1 Credit)

The course covers the following: challenges posed by globalization, internationalization as a complex management task, internationalization strategies, management concepts of international companies, and techniques of international companies.

WMKT300 Marketing Basics (1 Credit)

The course provides a detailed explanation of the marketing mix elements: product, price, distribution, and communication, as well as the main policies related to these elements. The course also focuses on the particularities of certain goods - industrial goods and services.

WMKT400 Internet Marketing (2 Credits)

This course is designed to enhance the students understanding and appreciation of the use of technology to fulfil the needs of both businesses and consumers. The course facilitates the learning of how businesses can utilize the technology infrastructure to initiate, replicate, and complement transactions with consumers.

3.9.2 Graduate Courses

BACC525 Accounting for Managers (3 Credits)

The course provides an understanding on the principles of financial and managerial accounting. It introduces students to the roles of both financial and managerial accounting within an organization. It stipulates students with skills needed to properly exploit and analyze accounting data at work, as well as making them aware of the basis on which key financial decisions are made.

BACC625 Advanced Auditing (3 Credits)

The course provides students with an in-depth understanding of professional standards, the audit process, advanced auditing techniques, and the auditor's role in ensuring that publicly issued financial statements are fairly presented. Students will learn how to apply auditing procedures to financial statement transaction cycles, and how to conduct audit sampling and testing techniques.

BACC675 Advanced Financial Accounting (3 Credits)

This course covers several complex topics and their effect on financial reporting and disclosure. Topics include investments in debt and equity securities business combinations consolidation at acquisition consolidation subsequent to acquisition consolidation and intercompany profit in inventory and land, consolidation and intercompany company in depreciable assets foreign currency transactions translation and consolidation of international operations.

BECO575 Economics for Managers (3 Credits)

This course is designed to introduce students to the advanced topics in managerial economics. Its major objective is to provide the theory and the essential tools for the analysis of microeconomics problems that have significant economic consequences on the firm and on the society. The course presents the major economic goals of the firm and delivers the optimal decision-making methods. In addition to that, the course presents the major economic indicators that managers should be aware of while considering investment decisions.

BECO625 Financial Economics (3 Credits)

This course is designed to provide students with an in-depth experience in the subject of financial economics. In this course students will cover the complete presentation of the theoretical concepts, as well as the review of the empirical evidence that either supports or refutes the theory. Students will explore the theoretical framework for analyzing the decisions by individuals and managers of firms, an area which is coming to both financial economics and microeconomics. Students will also explore the interplay of these decisions on the prices of financial assets.

BECO685 Advanced Financial Econometrics (3 Credits)

The course is designed to provide students with appropriate techniques and tools for estimating and interpreting single/multiple regression equations, formulating, and testing various economic hypotheses and modeling cross-sectional and time series data. The course extends the discussion and teaches students how to perform the needed tests to render for possible violations of the CLRM assumptions caused by multicollinearity, heteroscedasticity, autocorrelation, and misspecification. The course is extended to cover model's volatility in asset return data by focusing on ARCH/GARCH models along with panel data models. The approaches for modeling non-stationary data will be explored as well. All tests will be performed using EViews software and a rich database from Economena analytics.

BFIN525 Corporate Finance (3 Credits)

The course focuses on the financial concepts, skills, and technological applications that are most critical for MBA students in today's workplace. It also focuses on the analysis and study of the significant areas of financial planning and control, working capital and fixed asset management, and the identification and acquisition of funds in the money and capital markets; employment of financial techniques as aids in decision-making relative to balancing the liquidity-profitability objectives of a business firm. This course is an in-depth study of the financial management problems of business in general and corporations in particular, as they relate to working capital needs, flow of funds, optimum allocation, and management of current operations. Problems of capital budgeting, debt management, acquisition or merger, and other long-term financial problems in managing the capital structure are treated.

BFIN650 Financial Strategy (3 Credits)

The course highlights the importance of advanced financial theories and thus translates these theories into practice to support in making appropriate financial decisions. It provides the essential knowledge deemed necessary in order to maximize the shareholders' wealth through the attainment of optimal strategies and payout policies.

BFIN685 Investments and Portfolio Management (3 Credits)

This course is designed to provide an understanding on the key concepts in Investment theory. It provides students with variety of topics to understand the Investment environment, asset classes, and financial instruments. The course analyzes the methods of trading securities, presents mutual funds and other investment companies, examines capital allocation to risky assets, and analyses the effects of international diversification.

BHRM575 Managing Human Resources (3 Credits)

By studying this course, students will know what human resource management is, how it relates to the management process, and how it is changing in response to trends in the workplace. It illustrates how all managers can use HR concepts and techniques, HR's role in strategic planning and improved organizational performance, and the competencies required of HR managers. Human resources play a key role in helping companies meet the challenges of global competition. Strategic objectives to lower costs, improve productivity, and increase organizational effectiveness are changing the way every part of the organization, including the HR department, does business. Managers do not want to make personnel mistakes, such as hiring the wrong person, having their company taken to court because of discriminatory actions, or committing unfair labor practices. HRM can improve profits and performance by hiring the right people and motivating them appropriately.

BHRM625 Employee Benefits and Compensation (3 Credits)

The emphasis of this course is on the managerial level concepts and practices of compensation and benefits administration with emphasis on current theories of compensation and benefits trends, cost, value, and systems. Insights from thought leaders will be explored to enrich the learning experience. Attention is given to (1) the changing nature of compensation and benefits, (2) changing expectations of employees and competitive needs of employers and (3) evolving trends in performance and pay realignment to the strategic objectives of the organization. The course provides each student with an experiential opportunity to develop the managerial skills necessary to design and understand the performance-based compensation and benefit programs for an organization.

BHRM675 Training, Development and Performance (3 Credits)

This course focuses on issues of performing needs assessment, providing quality and strategic training to employees, transfer of training, training evaluation, and modern training and development methods. In addition, it focuses on the role of performance management in identifying, measuring, and developing the performance of individuals and teams, and aligning their performance with the strategic goals of the organization in order to sustain its key competitive advantage. Training and development, today, is viewed as the practice that assists companies to meet competitive challenges. In today's globalized world, it is relatively easy to gain access to the competition technology and products. In recognition to the internet and the accompanying high speed of communications, technologies and product differentiation are no longer a key competitive advantage in most industries. Consequently, what makes some businesses more successful than others, and what is today's key competitive advantage. The answer is people. Organizations with motivated and talented employees offering outstanding service to customers are likely to advance ahead of the competition, even if the products offered are similar to those offered by the competitors.

BHTM625 Managing Tourism Services (3 Credits)

The course discusses the role of services in an economy, the historical evolution of societies based on economic activity and emerging experience economy. Furthermore, it covers the designing of service enterprise to support the competitive strategy. New services are developed using techniques such as a service blueprint that diagrams the flow of activity occurring onstage above a line of visibility and backstage functions that are not seen by the customer. The notion of a service encounter describes the interaction between service provider and customer in the context of a service organization. Process analysis is treated in depth by identifying the bottleneck and calculating performance metrics such as throughput time. The challenges of delivering exceptional service quality are addressed by comparing customers' perceptions and expectations. The course also covers topics related to service supply relationships including a discussion of professional services and the disruptive impact of the block chain technology.

BHTM675 Entrepreneurship in Tourism (3 Credits)

Entrepreneurs and entrepreneurship are vital and important within the hospitality and tourism industries as key drivers of innovation and economic growth. This course gives a new and definitive overview of the vital role and effective practice of entrepreneurship in one of the most dynamic industry sectors in the world. In addition, entrepreneurs are extremely important in the hospitality and tourism industries, through the development of SMEs which are the backbone of the industry, or through the subsequent creation of global, multi-sector industries. This course has been designed to develop students' understanding of the different types of entrepreneurship within hospitality and tourism.

BMGT525 Strategic Management & Corporate Governance (3 Credits)

The purpose of this course is to assist the student in developing the necessary analytical ability, attitudes and decision-making skills required for the business manager in a changing environment. The student will gain experience in the application of various tools and disciplines in the solution of managerial problems in addition to the development of plans, policies, and programs to implement the chosen corporate strategy. Consequently, students will acquire logical judgment with respect to when and how the various tools and analytical techniques should be applied.

BMGT625 Leadership and Change Management (3 Credits)

The course covers an advanced survey of leadership theories and issues, with the emphasis on practical application of newer leadership models in contemporary organizations. Students will explore facets of both leadership and followership, along with the impact of the particular organizational setting and situation. Students will be challenged to explore their own leader, follower and situation analysis skills through active reflection, analysis of case studies, discussions, and popular business press treatment of leadership situations. In addition, the course provides students theory into practice framework upon which readers can understand and analyze effective change management.

BMGT675 Organizational Behavior (3 Credits)

The course aims to develop the breadth and depth of the understanding of what makes organizations function. It assimilates the study of management principles and practices with the study of human behavior within organizations. The focus will be upon translation of management and organizational behavior theory to practices that result in organizational effectiveness, efficiency, and human resource development. The course prepares students for advanced leadership roles in modern organization.

BMIS575 Information Systems for Managers (3 Credits)

The course focuses on how future managers are expected to understand the implications of IT, identify, and evaluate potential opportunities to employ IT, and take an active role in ensuring the successful use of IT within the organization. The course is also valuable for future IT managers who must understand how IT is viewed from the business perspective and how to work effectively with all members of the organization to achieve IT results.

BMIS650 E-Commerce Management (3 Credits)

The course provides an overview of e-commerce from both a technological and managerial perspective but focuses on the managerial aspect. The theoretical foundations necessary for understanding e-commerce are presented, ranging from consumer behavior to the economic theory of competition. The topics for discussion include the major e-commerce business and revenue models, social networks, marketing and advertising in the web environment, security issues, and the various e-payment methods. Major e-commerce related disciplines are addressed in this course. In addition, some non-business disciplines are touched upon, especially public administration, computer science, sociology, engineering, psychology, political science, law, and economics. Extensive and vivid examples from large corporations, small businesses, governments, and nonprofit agencies from all over the world are provided to make concepts come alive. The course will motivate students to create online business ideas and apply what has been learnt in real life applications.

BMIS685 Information Systems in Supply Chain (3 Credits)

This course develops the students' ability to conceptualize, design, and implement supply chains aligned with product, market, and customer characteristics. Business competition is evidently between supply networks rather than individual corporations. Managing the flow of products, information, and revenue across supply chains differentiates the capability of supply networks to fulfill customer requirements. Students will progress by evaluating how information flows can substitute for the stock of physical resources, such as inventory, and why systems within a supply chain succeed or fail. In addition, students assess how internet technologies, dynamic markets, and globalization are impacting supply chain strategies and practices, including logistics, digital coordination of decisions and resources, inventory and risk management, procurement and supply contracting, product and process design, and revenue management.

BMKT525 Marketing Management (3 Credits)

The purpose of this course is to introduce the student to marketing management principles and lay the foundation for component marketing decision-making in the realms of product, pricing, promotion, and distribution. The advantage of this view is that it greatly economizes on the learning that is required. Thus, the course is divided into non-profit marketing, public-sector marketing, industrial marketing, consumer marketing, services marketing. All of these applications are integrated into the course.

BMKT625 Service Marketing (3 Credits)

The course is designed for students who may be interested to work in service industries and will address the distinct needs and problems of service firms in the area of marketing. The primary theme of the course is that service organizations (e.g., banks, educational institutions, hospitals, hotels, professional services, transportation companies) require a distinctive approach to marketing strategy, both in its development and execution. The course will build on marketing concepts from other courses to make them specifically applicable in the service industry settings. A second theme of the course focuses on the role of service in manufacturing businesses. This course will suggest ways that firms in the manufactured goods sector might use “service” as a primary source of competitive advantage.

BMKT675 Advanced Consumer Behavior (3 Credits)

Marketing commences and finishes with the customer, from determining customers' needs, wants, perceptions, judgments, feelings, value, choices, and behavior to providing customer satisfaction and maintaining customer relationships. In addition, it focuses on the impact of the new media (internet expansion, smartphones, and e-commerce - orientated websites) on consumer information seeking, purchasing options, and decision making, recognizing that consumers now have fast and convenient access to information about virtually any product or service they wish to purchase. Consumer behavior focuses on how and why consumers make specific decisions and behave in certain ways, questioning what motivates them, captures their attention, and retains their loyalty.

BRMM575 Business Research Methods (3 Credits)

The course introduces the various methodologies and approaches relating to research in social sciences, including research design, literature review, quantitative and qualitative methods, data collection and analysis, statistical and interpretative analysis (using SPSS), and final report presentation. Furthermore, this course explains the requirements for academic research, considering aspects related to language, writing style and lay-out, referencing and citation style (Harvard). Finally, students will learn how to select the appropriate methodology for use in the field of development research and will be able to write a comprehensive research proposal followed by a research project.

BSTA575 Statistics for Decision Making (3 Credits)

The course provides an in-depth understanding to probability, decision theory, and statistical inference with emphasis on solutions to actual business problems. After developing a foundation in probability theory, this course will extend this foundation to a set of methodologies for the analysis of decision problems. The course examines structures for managerial decision making under conditions of partial information and uncertainty. The examination of the use of statistical techniques in managerial decision-making processes, including, confidence intervals, hypothesis testing, quality control, linear and multiple regression will be applied in realistic case situation. Moreover, this course intends to equip MBA students with the technical knowhow using the SPSS software.

MBA696A “MBA Thesis Part I” (3 Credits) and MBA696B “MBA Thesis Part II” (3 Credits)

The MBA thesis provides the enrolled student with the opportunity to explore and integrate the various aspects of the theories, the methods, the knowledge, and the skills acquired in the MBA courses. Combining this specific content with research approaches and professional practice questions will produce the relevant content and the educational progression of the thesis. By developing and writing the MBA thesis, which is an individual project, the student will demonstrate the ability to conduct research about business-related issues through the appropriate use of research procedures, resources, and methodologies that are directed towards delivering practical solutions. Essentially, the student is expected to propose research topics after reviewing the literature on a topic of his/her interest, define the problem, and formulate the research objectives and the research questions. The thesis should contribute to knowledge on the application of business theories in a real situation of practice or to theory formation in the business field. Furthermore, the other-different steps required from the student involve elaborating on the theoretical framework, designing an appropriate methodology, gathering primary and/or secondary data, critically analyzing data, drawing conclusions, explaining limitations, and recommending realistic solutions and/or courses of action in addition to further research suggestions. A supervisor will be guiding the student through the different stages/parts of the thesis. Upon completion, the student will need to submit a thesis report that is prepared in a scientific, clear, well-organized, and systematic format. Moreover, he/she will also need to defend his/her thesis in front of jury members.

WACC640 Advanced International Accounting (3 Credits)

In this course, special problem areas of international accounting will be discussed. The issues can vary depending on the current standard setting process of the IASB. Following key areas are planned: 1. Accounting of mergers 2. Accounting of non-derivative and derivative financial instruments 3. Accounting of share-based payments 4. Impairment tests 5. Segment reporting 6. Cash flow statement 7. Accounting of pension provisions 8. Accounting of real estate as being an investment. and testing techniques.

WMGT640 Dynamic Strategy & Strategic Renewal (2 Credits)

The course focuses on different international accounting topics: dynamic strategy and strategic renewal, path creation, transforming the resource-base, transforming the capability base (dynamic resource-based strategies), and business model transformation.

WMGT650 Crafting Strategy (2 Credits)

The course focuses on the concept of strategy and how companies can evaluate their external environment, their resources and competitive position, and their capabilities. The course also explains the strategy development (generic strategies, tailoring strategy to fit industry and company situations, strategies, ethics, and social responsibility). Finally, the course elaborates on the strategy execution.

WMGT655 Strategic Planning (4 Credits)

This course focuses on the transfer of knowledge for modern planning instruments in strategic and operative planning. This course also helps the students know and understand the goals, tasks, and processes of management within the scope of planning.

WMGT665 Managing Corporate Distress (3 Credits)

In this course, students will learn how to distinguish between troubled and crisis companies and how to use both qualitative and quantitative tools to effect solutions. As the form of restructuring is unique to each organization and what the entity intends to achieve, the course is designed to foster a better understanding of what corporations do and why they do it. The course thereby examines challenges and opportunities that organizations face within a restructuring phase.

WMKT640 Distribution Management (5 Credits)

In the distribution management course, students receive knowledge about direct-marketing and strategies of direct marketing, besides value innovation, which focuses on reconsidering existing structures.

WMKT650 Strategic Sourcing & Retail Procurement (2 Credits)

In this course, students will get to know about core procurement functions and core cross-functional procurement processes. The course thereby focuses on the interdependence of retailers' strategy and procurement (brand building, market positioning, and differentiation). Practices of an effective in season management are discussed, based on selected product types (basic and promotion, perishables, fashion). Finally, students will learn on how to set up and execute category management strategies.

WMKT655 Retail Strategy (2 Credits)

In this course, students will learn about how to identify and exploit growth potentials and how to support the development of successful retail strategies. Strategy tools are taught providing basic consulting skills and a toolkit for the corporate strategist.

4 School of Engineering

4.1 Vision

Our mission is to provide students, especially underserved, with the required skills and abilities to succeed as engineers, to become future leaders in their professions, and to be responsible and enlightened citizens. Furthermore, we aim to sustain quality academic programs the recruitment and retention of qualified faculty, in addition to fostering research.

4.2 Mission

To be recognized as one of the nation's leading engineering schools by empowering and enabling graduates to make a difference on contemporary and emerging issues.

4.3 Values

Excellence and Quality: We conduct our work according to the highest standards of excellence and best practices in higher education.

Professional Ethics: We are committed to adhering to the ethical canons developed by engineering professional bodies and respective regulations.

Loyalty: We embrace critical loyalty to the school's stakeholders and the community at large.

Diversity and Outreach: We value diversity and cultural differences and recognize the importance of establishing solid networks with partners and stakeholders.

Autonomy: We promote the autonomy of faculty, staff, and students to foster an environment of creativity and innovation.

Social Responsibility and Sustainability: We are a part of the community and we shall contribute to its well-being, welfare, and sustainability.

The School of Engineering Consists of the following departments/programs:

- 1. Department of Computer and Communications Engineering:**
 - Bachelor of Science in Computer Engineering
 - Bachelor of Science in Communications Engineering
 - Master of Science in Computer and Communications Engineering
- 2. Department of Electrical and Electronics Engineering:**
 - Bachelor of Science in Electrical Engineering
 - Bachelor of Science in Electronics Engineering
 - Master of Science in Electrical Engineering
 - Master of Science in Electronics Engineering
- 3. Department of Biomedical Engineering:**
 - Bachelor of Science in Electronics Engineering – Emphasis on Biomedical Engineering
 - Master of Science in Electronics Engineering – Emphasis on Biomedical Engineering
- 4. Department of Industrial Engineering:**
 - Bachelor of Science in Industrial Engineering
 - Master of Science in Industrial Engineering
- 5. Department of Mechanical Engineering:**
 - Bachelor of Science in Mechanical Engineering
 - Master of Science in Mechanical Engineering
- 6. Department of Surveying Engineering:**
 - Bachelor of Science in Surveying Engineering
 - Master of Science in Surveying Engineering

4.4 Admission Requirements

4.4.1 Admission Requirements - Undergraduate Program

Application for admission should be submitted before the end of September of each year. However, applicants may be assessed and selected at any time of the year based upon their Lebanese Baccalaureate II and/or their Grade 12, American System, examination results and University Placement Tests (UPTs) results. Furthermore, Applicants to the undergraduate programs in the School of Engineering are subjected to the following general conditions:

1. Have earned a recognized high school diploma, Baccalaureate II, Lebanese System, or its equivalency that is either a freshman in Sciences or in Arts or foreign secondary High School equivalent.
2. A candidate should have earned the Lebanese Baccalaureate with an overall average of at least 50%; the categories of the Lebanese Baccalaureate are listed below:
 - a) General Science
 - b) Natural Science
 - c) Sociology and Economics
 - d) Baccalaureate Technique (BT) (as per Ministry Decision 779/2013), with three additional remedial courses: MATH161, PHYS161, and CHEM160.
 - e) TS (Technical Superior) and LT (License Technique) (as per Decree 8590/2012)
3. A Lebanese Baccalaureate holder is exempted from a particular University Placement Test (UPT) if and only if the relevant course had been passed with 50 % and above

Table 15: School of Engineering Placement Criteria

Subject	Score	Placement
English	0 - 30	ENGL051 Basic English Skills.
	31-40	ENGL101 Introduction to Oral and Written Skills.
	41-49	ENGL151 Advanced Writing Skills.
	50 and above	Exempted from ENGL051, ENGL101, and ENGL151.
Mathematics	0-24	MATH161 (Basics of Mathematics, 6 Credits)
	25-49	MATH160 (Calculus I, 3 Credits)
	50 and above	Exempted
Physics	0-24	PHYS161 (Basics of College Physics, 6 Credits)
	25-49	PHYS160 (Freshman Physics II, 3 Credits)
	50 and above	Exempted
Chemistry	Less than 49	CHEM160 (Freshman Chemistry II, 3 Credits)
	50 and above	Exempted

The passing grade of the aforementioned remedial courses is either Pass (P) or Non-Pass (NP) in which the passing grade cannot be less than 50 %.

LIU English Hierarchy versus TOEFL Scale: The Lebanese International University (LIU) takes on TOEFL Scale as a benchmark to place applicants in various English levels. Based on the results of English Placement Test (EPT), students may be placed in English Remedial courses according to the Table 6 in section 2.7 above.

4.4.2 Admission Requirements - Graduate Program

Applications for admission in a master program should be submitted before the end of September of each year. However, applicants may be assessed and selected at any time of the year based upon their Bachelor degrees. However, applicants to graduate programs in the School of Engineering must complete all required forms for admission as well as submit official transcripts from all colleges and universities attended.

- a) Lebanese International University (LIU) graduates: Completion of BSc degree with Cumulative Grade of 70%.
- b) Non-LIU graduates: Applicants who have earned their Bachelors of Science in engineering from other universities, accredited by the Lebanese Ministry of Education and Higher Education, and their Cumulative Grade is at least 70% American system (50% Lebanese University Science/Technology, 60%

Lebanese University Science Engineering) are admitted to the respective Masters' program at LIU. Applicants might be required to sit for the English Placement Test (EPT) and may take specific major remedial courses.

4.4.3 Transfer Students - Course Transfer Criteria

Courses taken at Universities and Institutions accredited by the ministry of higher education can, in principle, be accredited by LIU. Course transfer criteria adopted by the School of Engineering are as follows:

1. Transfer of credits from other institutions to LIU should not exceed 49% of total required credits, and no more than 50% of the major courses; the remaining 51% of credits must be taken at LIU.
2. Transferable courses are subject to passing and good standing average grades set by the institution issuing the grades. Passing grade is required for individual courses and good standing for the sum of transferred courses.
3. Transfer of credits should be approved by chair of the concerned department and by the dean of the school, provided courses taken at an accredited university/institution are in accordance to course description and credit requirements.
4. A candidate who earned a non-engineering degree (Bachelor or higher in Engineering Technology or Science), can only join the undergraduate engineering programs as transfer student (Ministry's Engineering Profession Committee Decision 56/2019, for applicants of fall 2019-2020 onward). In addition to the requirements in parts (a-c) above, the candidate must finish at least 38 credits in science, math and engineering at LIU.
5. For TS transfers, the decree 8590/2012 (Article 16) and the Engineering Profession Committee Decision 56/2019 (Article 4) apply:
 - a. A minimum of 12/20 overall average is required in either TS or higher degrees (e.g. LT).
 - b. Only passed TS courses (both course passing grade and good standing grade at vocational schools is 10/20) can be transferred (course transfer follows normal university procedure; course content and number of hours should be checked).
 - c. A maximum of 50% can be transferred for any Bachelor degree Except: BSc in Engineering, Engineering Diploma (BE) or any other five-year (10 semesters) degree. In this case 30% of credits can be transferred and 70% must be taken at the university.
 - d. Engineering Profession Committee Decision 56/2019 (Article 4) added that the 70% remaining credits for the BSc, BE or Engineering Diploma must consist solely of science, math, and engineering courses (SME), i.e., out of the 32 transferable credits only 17 credits can be SME credits.
6. A candidate who earned a Bachelor degree in engineering from LIU and wishes to continue his/her master studies in different field of engineering is subjected to additional remedial courses as set by the department.

4.5 Graduation Requirements

4.5.1 Undergraduate Program

An undergraduate student can only graduate upon the fulfillment of the program credits requirements with cumulative Grade of 70% (2.0 in the cumulative GPA) or higher having a minimum of:

- a. 15-18 credit hours of General Education.
- b. 21-24 credit hours of Engineering Core Courses.
- c. 66-72 credit hours of Major Courses.
- d. 108 credit hours in total.

4.5.2 Graduate Program

A graduate student can only graduate upon the fulfillment of the program credits requirements (52 credits) with cumulative Grade of 70% (2.0 in the cumulative GPA) or higher.

4.6 Program of Study – Undergraduate programs

4.6.1 CENG - Bachelor of Science in Computer Engineering (108 Credits)

About the program

The Bachelor of Science in Computer Engineering (CENG) program is designed to equip the student with the fundamental skills required to meet the demands of the computing industry. The program is designed to provide the required theoretical grounding and the practical skills required in a rapidly evolving information processing environment.

Domain of Work

Most of the graduates of this program find employment in the fields of:

- Software development
- Computer networking and IT
- Embedded systems development
- Home automation
- Web programming, and
- Mobile application development.

Program Educational Objectives (PEOs)

Within few of years of graduation, Computer Engineering graduates will:

1. Apply fundamental concepts underlying computer engineering in the workplace. Graduates of the program apply the technical skill required to complete the tasks expected of a computer or communications engineer.
2. Analyze and solve significant business and research related problems in the computer and communications engineering domain. The program is heavily focused on the development of solutions to problems that are similar to those that graduates will encounter in a professional setting.
3. Continue their professional development in the computer and communications industries as new technologies and concepts enter this field.

Program Learning Outcomes (PLOs)

At the time of graduation, students are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGG450 - Engineering Ethics and Professional Practice	3

ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	31
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1

CSCI300 - Intermediate Programming with Objects	3
ENGG200 - Introduction to Engineering	3
ENGG300 - Engineering Economics	3
MATH210 - Calculus II	3
MATH220 - Calculus III	3
MATH225 - Linear Algebra with Applications	3
MATH270 - Ordinary Differential Equations	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
PHYS220 - Physics for Engineers	3
Major Requirements	53
CENG250 - Digital Logic I	3
CENG325 - Software Applications and Design	3
CENG335 - Digital Logic II	3
CENG352L - Digital Logic Circuits Lab	1
CENG375 - Introduction to Database Systems	3
CENG380 - Microprocessors and Microcontrollers	3
CENG400 - Computer Organization and Design	3
CENG400L - Microcontroller Applications Lab	1
CENG415 - Communication Networks	3
CENG420 - Web Programming and Technologies	3
CENG430L - Linux Lab	1
CENG435 - Mobile Application Development	3
CENG450L - Scripting Languages Lab	1
CENG455L - Communication Networks Lab	1
CENG495 - Senior Project	3

EENG250 - Electric Circuits I	3
EENG300 - Electric Circuits II	3
EENG301L - Electric Circuits Lab	1
EENG350 - Electronic Circuits I	3
EENG350L - Electronic Circuits I Lab	1
EENG385 - Signals and Systems	3
EENG447 - Analog Communication Systems	3
EENG467L - Analog Communication Systems Lab	1
General Education Electives	3
GE**** General Education Electives	3
Major Elective	6
ME**** Major Elective	6

List of Major Electives - CENG

Course Title	Cr
CENG460 - Operating Systems	3
CENG470 - Data Structures and Analysis of Algorithms	3

4.6.2 TENG – BSc in Communication Engineering (108 Credits)

About the program

The Bachelor of Science in Communication Engineering (TENG) program is designed to equip the student with the fundamental skills required to meet the demands of the communications industry. The program is designed to provide the required theoretical grounding and the practical skills required in a rapidly evolving information processing environment.

Domain of Work

Most of the graduates of this program find employment in the fields of:

- Communication systems testing.
- Software development.
- Computer networking and IT.
- Embedded systems development.
- Home automation.
- Web programming, and
- Mobile application development

Program Educational Objectives (PEOs)

Within few of years of graduation, Communications Engineering graduates will:

1. Apply fundamental concepts underlying computer engineering in the workplace. Graduates of the program apply the technical skill required to complete the tasks expected of a computer or communications engineer.
2. Analyze and solve significant business and research related problems in the computer and communications engineering domain. The program is heavily focused on the development of solutions to problems that are similar to those that graduates will encounter in a professional setting.
3. Continue their professional development in the computer and communications industries as new technologies and concepts enter this field.

Program Learning Outcomes (PLOs)

At the time of graduation, students are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
General Education Requirements	12
ARAB200 - Arabic Language and Literature	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	34
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1
CSCI300 - Intermediate Programming with Objects	3
ENGG200 - Introduction to Engineering	3
ENGG300 - Engineering Economics	3
ENGG450 - Engineering Ethics and Professional Practice	3
MATH210 - Calculus II	3
MATH220 - Calculus III	3
MATH225 - Linear Algebra with Applications	3
MATH270 - Ordinary Differential Equations	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
PHYS220 - Physics for Engineers	3
Major Requirements	56
CENG250 - Digital Logic I	3
CENG325 - Software Applications and Design	3
CENG335 - Digital Logic II	3
CENG352L - Digital Logic Circuits Lab	1
CENG375 - Introduction to Database Systems	3
CENG380 - Microprocessors and Microcontrollers	3
CENG400 - Computer Organization and Design	3
CENG400L - Microcontroller Applications Lab	1
CENG415 - Communication Networks	3

CENG420 - Web Programming and Technologies	3
CENG430L - Linux Lab	1
CENG435 - Mobile Application Development	3
CENG450L - Scripting Languages Lab	1
CENG455L - Communication Networks Lab	1
CENG495 - Senior Project	3
EENG250 - Electric Circuits I	3
EENG300 - Electric Circuits II	3
EENG301L - Electric Circuits Lab	1
EENG350 - Electronic Circuits I	3
EENG350L - Electronic Circuits I Lab	1
EENG385 - Signals and Systems	3
EENG388 - Electromagnetic Fields and Waves	3
EENG447 - Analog Communication Systems	3
EENG467L - Analog Communication Systems Lab	1
General Education Electives	3
GE**** General Education Electives	3
Major Elective	3
ME***** Major Elective	3

List of Major Electives - TENG

Course Title	Cr
CENG460 - Operating Systems	3
CENG480 - Introduction to GIS	3

4.6.3 EENG - BSc in Electrical Engineering (108 Credits)

About the program

The educational mission of the Bachelor of Science in Electrical Engineering (Hereafter “BS EENG”) program is to graduate engineering students with fundamental technical knowledge and practice of their career and communication skills to develop innovative solutions to complex technological problems. The program prepares them to work as professional engineers or participate in graduate university programs.

Domain of Work

The graduates of the BS EENG program can work in, but limited to, the following fields:

- Power Electronics and Machinery
- Construction: Electrical Wiring and Installation
- Transportation Industry
- Industrial Sector
- Control Systems
- Contracting and Consultancy
- Maintenance
- Public service (Government)

Program Educational Objectives (PEOs)

Within few of years of graduation, Electrical Engineering graduates will:

1. Solve faced electrical engineering problem, analyze and design electrical engineering systems.
2. Serve their profession and/or employer in a responsible, ethical, creative and enthusiastic manner to meet the economic, environmental and societal needs of industry and society.
3. Effectively communicate ideas with technical and non-technical people, and work effectively in teams.
4. Be active participants in ongoing professional development, professional growth and increasing professional responsibility.

Program Learning Outcomes (PLOs)

At the time of graduation, students are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
General Education Requirements	18
ARAB200 - Arabic Language and Literature	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGG300 - Engineering Economics	3
ENGG450 - Engineering Ethics and Professional Practice	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	34
CENG250 - Digital Logic I	3
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1
ENGG200 - Introduction to Engineering	3
MATH210 - Calculus II	3
MATH220 - Calculus III	3
MATH225 - Linear Algebra with Applications	3
MATH270 - Ordinary Differential Equations	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
MENG225 - Engineering Drawing & CAD	3
MENG250 - Statics	3
PHYS220 - Physics for Engineers	3
Major Requirements	50
CENG352L - Digital Logic Circuits Lab	1
CENG380 - Microprocessors and Microcontrollers	3
CENG400L - Microcontroller Applications Lab	1
CENG495 - Senior Project	3
EENG250 - Electric Circuits I	3
EENG300 - Electric Circuits II	3

EENG301L - Electric Circuits Lab	1
EENG350 - Electronic Circuits I	3
EENG350L - Electronic Circuits I Lab	1
EENG360 - Introduction to Power Systems	3
EENG385 - Signals and Systems	3
EENG388 - Electromagnetic Fields and Waves	3
EENG400 - Electronic Circuits II	3
EENG400L - Electronic Circuits II Lab	1
EENG410 - Power Electronics I	3
EENG410L - Power Electronics I Lab	1
EENG435 - Control Systems	3
EENG435L - Control Systems Lab	1
EENG440 - Electric Machines I	3
EENG465 - Electrical wiring and Installation	3
EENG491 - Electric Machines II	3
EENG491L - Electric Machines II Lab	1
General Education Electives	3
GE**** General Education Electives	3
Major Elective	3
ME**** Major Elective	3

List of Major Electives - EENG

Course Title	Cr
CENG477 - Industrial Networks	3
EENG451 - Measurements and Sensors	3
EENG482 - Electrical Systems Simulation	3

4.6.4 LENG - BSc in Electronics Engineering (108 Credits)

About the program

The educational mission of the Bachelor of Science in Electronics Engineering (Hereafter “BS LENG”) program is to graduate engineering students with fundamental technical knowledge and practice of their career and communication skills to develop innovative solutions to complex technological problems. The program prepares them to work as professional engineers or participate in graduate university programs.

Domain of Work

The graduates of the BS LENG program can work in, but limited to, the following fields:

- | | |
|---|---|
| <input type="checkbox"/> Communications | <input type="checkbox"/> Power Electronics |
| <input type="checkbox"/> Security Systems | <input type="checkbox"/> Control Systems |
| <input type="checkbox"/> Electronic design | <input type="checkbox"/> Contracting and Consultancy |
| <input type="checkbox"/> PCB Manufacturing | <input type="checkbox"/> Maintenance |
| <input type="checkbox"/> Production Lines (Sensors, Data Acquisition) | <input type="checkbox"/> Public service (Government). |

Program Educational Objectives (PEOs)

Within few of years of graduation, Electronics Engineering graduates will:

1. Solve faced electronics engineering problem, analyze and design electronics engineering systems.
2. Serve their profession and/or employer in a responsible, ethical, creative and enthusiastic manner to meet the economic, environmental and societal needs of industry and society.
3. Effectively communicate ideas with technical and non-technical people, and work effectively in teams.
4. Be active participants in ongoing professional development, professional growth and increasing professional responsibility.

Program Learning Outcomes (PLOs)

At the time of graduation, students are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
General Education Requirements	12
ARAB200 - Arabic Language and Literature	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	41
CENG250 - Digital Logic I	3
CENG335 - Digital Logic II	3
CENG430L - Linux Lab	1
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1
CSCI300 - Intermediate Programming with Objects	3
ENGG200 - Introduction to Engineering	3
ENGG300 - Engineering Economics	3
ENGG450 - Engineering Ethics and Professional Practice	3
MATH210 - Calculus II	3
MATH220 - Calculus III	3
MATH225 - Linear Algebra with Applications	3
MATH270 - Ordinary Differential Equations	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
PHYS220 - Physics for Engineers	3
Major Requirements	52
CENG352L - Digital Logic Circuits Lab	1
CENG380 - Microprocessors and Microcontrollers	3

CENG400L - Microcontroller Applications Lab	1
CENG495 - Senior Project	3
EENG250 - Electric Circuits I	3
EENG300 - Electric Circuits II	3
EENG301L - Electric Circuits Lab	1
EENG350 - Electronic Circuits I	3
EENG350L - Electronic Circuits I Lab	1
EENG385 - Signals and Systems	3
EENG388 - Electromagnetic Fields and Waves	3
EENG400 - Electronic Circuits II	3
EENG400L - Electronic Circuits II Lab	1
EENG405 - CAD Tools for Electronics	3
EENG410 - Power Electronics I	3
EENG410L - Power Electronics I Lab	1
EENG435 - Control Systems	3
EENG435L - Control Systems Lab	1
EENG447 - Analog Communication Systems	3
EENG459 - Electronic Systems	3
EENG459L - Electronic Systems Lab	1
EENG461 - Digital Electronics	3
EENG461L - Digital Electronics Lab	1
EENG467L - Analog Communication Systems Lab	1
General Education Electives	3
GE**** General Education Electives	3

4.6.5 BENG - BSc in Electronics Engineering – Biomedical Engineering (108 Credits)

About the program

The mission of the Department of Electronics Engineering – Emphasis on Biomedical Engineering is to educate undergraduate students and provide them with multi-disciplinary training for productive careers in the health-related areas of industry. To achieve our educational mission, a curriculum that integrates engineering sciences, life sciences, clinical medicine, research and engineering design is offered. Cultivating our students' problem-solving and communication skills, promoting their ability to think critically and independently, and helping them to understand scientific and engineering approaches through a five-year sequence of courses represent the scope of the Biomedical Engineering program.

Domain of Work

Areas where graduates with a degree from the Department of Biomedical Engineering include:

- Industry: Medical Device Design, Analysis, Marketing, and Utilization.
- Hospital Systems and Clinical Engineering.
- Healthcare Technology Management.
- Physiological Systems Analysis.
- Rehabilitation Engineering.

Program Educational Objectives (PEOs)

Within few of years of graduation, BENG graduates will:

1. Integrate and apply basic principles of mathematics, life sciences, and engineering fundamentals to identify and solve problems in the field of biomedical engineering
2. Use modern technology
3. Build their professional identity and develop in their jobs
4. Undergo intellectual growth and engage in life-long learning
5. Communicate effectively in both written reports and oral presentations
6. Work effectively within multidisciplinary teams

Program Learning Outcomes (PLOs)

The graduates of the program are expected to develop skills, knowledge, technical know-how, behavior and motivation that support the objectives of the program. Specifically, graduates of the Bachelor of Science in Biomedical Engineering program will acquire the following:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGG300 - Engineering Economics	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	34
CHEM200 - General Chemistry	3
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1
ENGG200 - Introduction to Engineering	3
ENGG450 - Engineering Ethics and Professional Practice	3
MATH210 - Calculus II	3
MATH220 - Calculus III	3
MATH225 - Linear Algebra with Applications	3
MATH270 - Ordinary Differential Equations	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
MENG250 - Statics	3
PHYS220 - Physics for Engineers	3
Major Requirements	56
CENG250 - Digital Logic I	3
CENG352L - Digital Logic Circuits Lab	1
CENG495 - Senior Project	3
EENG250 - Electric Circuits I	3

EENG300 - Electric Circuits II	3
EENG301L - Electric Circuits Lab	1
EENG304 - Biology for Biomedical Engineers	3
EENG350 - Electronic Circuits I	3
EENG350L - Electronic Circuits I Lab	1
EENG354 - Physiology for Biomedical Engineers	3
EENG354L - Physiology for Biomedical Engineers Lab	1
EENG385 - Signals and Systems	3
EENG388 - Electromagnetic Fields and Waves	3
EENG400 - Electronic Circuits II	3
EENG400L - Electronic Circuits II Lab	1
EENG404 - Biophysics and Bioelectricity	3
EENG414 - Biocompatibility	3
EENG424 - Medical Instrumentation I	3
EENG424L - Medical Instrumentation I Lab	1
EENG435 - Control Systems	3
EENG435L - Control Systems Lab	1
EENG474 - Medical Imaging I	3
EENG484 - Acquisition & Microcontrollers in Biomedical Engineering	3
EENG484L - Acquisition and Microcontrollers in Biomedical Engineering Laboratory	1
General Education Electives	3
GE**** General Education Electives	3

4.6.6 IENG - BSc in Industrial Engineering (108 Credits)

About the program

The main purpose is to develop a strong and comprehensive engineering program at the undergraduate level which focuses on preparing students to become knowledgeable professionals who understand theoretical concepts and relate them to practice. This will be accomplished through incorporating design problems, practical examples, case studies, and computer software application into the teaching material which is essential to the education and preparation of students to professional practice. Such an approach draws the students' attention to the practical application of theories and topics of the study material and further helps to guide students in deciding the direction of their future specialization.

The program draws upon specialized knowledge and skills in mathematics, basic and applied engineering sciences, engineering management and social sciences. Industrial engineers specify, predict, evaluate and design systems with a view to improve efficiency, productivity, quality and safety. In this program, students are prepared to deal with issues regarding production management, manufacturing systems, quality management, facilities planning, simulation and safety engineering, and are involved in preparing, reviewing, and updating technical documentation.

Domain of Work

With an expected outlook of more industrial growth, more complex business operations, and the greater use of automation in factories and in organizations, graduates with a degree from the Industrial Engineering department will have best job prospects in the following fields:

- | | |
|--|---|
| <input type="checkbox"/> Manufacturing. | <input type="checkbox"/> Information technology sector. |
| <input type="checkbox"/> Public service (Government). | <input type="checkbox"/> Systems engineering. |
| <input type="checkbox"/> Simulation. | <input type="checkbox"/> Supply chain. |
| <input type="checkbox"/> Automation. | <input type="checkbox"/> Healthcare. |
| <input type="checkbox"/> Optimization. | <input type="checkbox"/> Operations management. |
| <input type="checkbox"/> Banking, finance and services industry. | <input type="checkbox"/> Education and research. |
| <input type="checkbox"/> Engineering project management. | |

Program Educational Objectives (PEOs)

Within few of years of graduation, Industrial Engineering graduates will:

1. Solve different kinds of Industrial Engineering problems they face in their professional career.
2. Identify and analyze contemporary pressing engineering problems and formulate their feasible and adequate solutions.
3. Nourish professional development through technology transfer and exchange of expertise and demonstrate commitment to social, ethical and professional responsibilities through their contribution to the general welfare of the society.
4. Pursue advanced engineering studies and be employable in a variety of industrial engineering jobs.

Program Learning Outcomes (PLOs)

The graduates of the program are expected to develop skills, knowledge, technical know-how, behavior and motivation that support the objectives of the program. Specifically, graduates of the Bachelor of Science in Industrial Engineering program will acquire the following:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
General Education Requirements	18
ARAB200 - Arabic Language and Literature	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGG300 - Engineering Economics	3
ENGG450 - Engineering Ethics and Professional Practice	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	37
CHEM200 - General Chemistry	3
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1
EENG250 - Electric Circuits I	3
ENGG200 - Introduction to Engineering	3
MATH210 - Calculus II	3
MATH220 - Calculus III	3
MATH225 - Linear Algebra with Applications	3
MATH270 - Ordinary Differential Equations	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
MENG225 - Engineering Drawing & CAD	3
MENG250 - Statics	3
PHYS220 - Physics for Engineers	3
Major Requirements	50

CENG495 - Senior Project	3
EENG370 - Industrial Electronics	3
EENG370L - Industrial Electronics Lab	1
IENG310L - Industrial Engineering Field Visit	1
IENG320 - Introduction to Environmental Engineering	3
IENG350 - Introduction to System Engineering	3
IENG360 - Operations Analysis Methods	3
IENG370 - Industrial Systems Simulation	3
IENG400 - Design and Analysis of Engineering Experiments	3
IENG410 - Human Factors Engineering	3
IENG420 - Industrial Engineering Information Systems	3
IENG430 - Inventory Control	3
IENG440 - Quality Control and Reliability	3
IENG450 - Industrial Engineering CAD/CAM Tools	3
IENG460 - Production Planning and Control	3
IENG470 - Facilities Planning	3
IENG480 - Manufacturing Processes	3
MENG310 - Engineering Material Science	3
General Education Electives	3
GE**** General Education Electives	3

4.6.7 MENG - BSc in Mechanical Engineering (108 Credits)

About the program

The mission of the Mechanical Engineering Program is to offer the highest quality in engineering education so that graduates are prepared to create, plan, research, supervise, analyze, and generally act as professionals of the mechanical technology that will compete in today's job market.

Domain of Work

Mechanical engineers are responsible for the design, construction, maintenance, and operation of machines and systems of machines. Their knowledge and skills are needed in many industries such as:

- Heating, Ventilation, and Air Conditioning (HVAC)
- Transportation
- Power Generation and Distribution
- Metal Production, Processing, and Manufacturing
- Chemical and Electrical Equipment
- Design of Machines and Structures including the exploration of their Noise, Vibration, and Harshness (NVH).

Program Educational Objectives (PEOs)

Within few of years of graduation, Mechanical Engineering graduates will:

1. Use their strong foundation in the core fundamentals of mechanical engineering, basic science, and mathematics in their future careers.
2. Communicate effectively in oral, written, and electronic media and have the necessary teamwork and leadership skills to work and participate effectively in a team environment.
3. Be technically competent in their mechanical engineering knowledge and skills in professional or advanced academic settings.
4. Be committed to the engineering profession and to expanding their knowledge and skills set with increasing independence and responsibility.

Program Learning Outcomes (PLOs)

The objectives of the program are ensured by educating graduates to be responsible for the design, construction, maintenance, and operation of machines and systems of machines and by enhancing the students' communication, social, and management skills. The graduates of the program are expected to develop skills, knowledge, and behaviors that support the objectives of the program. Specifically, graduates of the Mechanical Engineering program will have:

5. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
6. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
7. An ability to communicate effectively with a range of audiences
8. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
9. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
10. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
11. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGG450 - Engineering Ethics and Professional Practice	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	38
CHEM200 - General Chemistry	3
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1
EENG250 - Electric Circuits I	3
EENG370 - Industrial Electronics	3
EENG370L - Industrial Electronics Lab	1
ENGG300 - Engineering Economics	3
MATH210 - Calculus II	3
MATH220 - Calculus III	3
MATH225 - Linear Algebra with Applications	3
MATH270 - Ordinary Differential Equations	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
MATH375 - Numerical Methods for Scientists & Engineers	3
PHYS220 - Physics for Engineers	3
Major Requirements	52
CENG495 - Senior Project	3

EENG435 - Control Systems	3
EENG492 - Electric Machines For Mechanical Engineers	3
EENG492L - Electric Machines For Mechanical Engineers Lab	1
MENG225 - Engineering Drawing & CAD	3
MENG250 - Statics	3
MENG300 - Dynamics	3
MENG310 - Engineering Material Science	3
MENG320 - Engineering Thermodynamics I	3
MENG320L - Engineering Thermodynamics I Lab	1
MENG360 - Mechanics of Materials I	3
MENG360L - Mechanics Of Materials I Lab	1
MENG370 - Fluid Mechanics I	3
MENG370L - Fluid Mechanics I Lab	1
MENG410 - Mechanics of Materials II	3
MENG420 - Heat Transfer	3
MENG420L - Heat Transfer Lab	1
MENG430 - Mechanical Vibrations I	3
MENG430L - Mechanical Vibrations I Lab	1
MENG450 - Mechanical Systems I	3
MENG450L - Mechanical Systems I Lab	1
MENG470 - Internal Combustion Engines	3
General Education Electives	3
GE**** General Education Electives	3

4.6.8 SURV - BSc in Surveying Engineering (108 Credits)

About the program

The Department of Surveying engineering intends to prepare students at the undergraduate level for being well-informed professionals who can relate the theoretical concept to reality. It is intended to enhance communication skills, scientific and engineering approaches and problem-solving skills through a sequence of courses. Reaching this educational mission is accomplished by integrating academic theories with practical examples, case studies and computer software applications in order to achieve a well-prepared background that enables graduates to apply the teaching materials in the market.

Domain of Work

Regarding the wide field domain that requires surveying solutions, graduates holding a bachelor degree in surveying engineering are capable to have job vacancies in the following fields:

- | | |
|--|---|
| <input type="checkbox"/> Construction and consultancy projects | <input type="checkbox"/> Real estate projects |
| <input type="checkbox"/> Land division studies | <input type="checkbox"/> Quantity survey engineering |
| <input type="checkbox"/> Infrastructure design | <input type="checkbox"/> Topographic and Cadastral survey |
| <input type="checkbox"/> Engineering project management | <input type="checkbox"/> Photogrammetry sector |
| <input type="checkbox"/> Road and highway design studies | |

Program Educational Objectives (PEOs)

Within few of years of graduation, Surveying Engineering graduates will:

1. Analyze and develop solutions to surveying and geomatics engineering problems
2. Apply different laws - local, national and international, for execution of surveying engineering works
3. Convey effectively technical information as individuals and as members of a professional team
4. Pursue higher education in the field of geomatics and surveying engineering

Program Learning Outcomes (PLOs)

The graduates of the program are expected to develop skills, knowledge, technical know-how, behavior and motivation that support the objectives of the program. Specifically, graduates of the Bachelor of Science in Surveying Engineering program will acquire the following:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
General Education Requirements	12
ARAB200 - Arabic Language and Literature	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	37
EENG250 - Electric Circuits I	3

ENGG300 - Engineering Economics	3
ENGG450 - Engineering Ethics and Professional Practice	3
MATH210 - Calculus II	3
MATH220 - Calculus III	3
MATH225 - Linear Algebra with Applications	3
MATH270 - Ordinary Differential Equations	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
MENG225 - Engineering Drawing & CAD	3
MENG250 - Statics	3

PHYS220 - Physics for Engineers	3
SURV251 - Introduction to Surveying Engineering	3
SURV251L - Introduction to Surveying Engineering Lab	1
Major Requirements	53
CENG495 - Senior Project	3
SURV305 - Surveying I	3
SURV305L - Surveying Practice I Lab	1
SURV315 - Geology	3
SURV325 - Cartography	3
SURV335 - Surveying Drawing & CAD	3
SURV355 - Surveying II	3
SURV355L - Surveying Practice II Lab	1
SURV365 - Geodesy I	3
SURV375 - Topometric Calculus I	3
SURV385 - Computer Aided Drafting for Surveyors	3
SURV405 - Photogrammetry	3
SURV414 - Cadastral Surveying and Construction LAW	3
SURV420 - Surveying application I	3
SURV425 - Topometric Calculus II	3

SURV435 - Theory of Measurement Errors	3
SURV445 - Geodesy II	3
SURV455 - Geographic Information Systems I	3
SURV465 - Spatial Geodesy (GPS I)	3
General Education Electives	3
GE**** General Education Electives	3
Major Elective	3
ME**** Major Elective	3

List of Major Electives – SURV

Course Title	Cr
SURV474 - Urban Planning and Land Subdivision	3
SURV477 - Land Design and Site Development	3
SURV478 - Quality Control and Quantity Surveying	3
SURV479 - Cadastral Information Surveying	3

4.7 Program of Study – Graduate programs

4.7.1 MCCE - MS in Computer and Communications Engineering (52 Credits)

About the program

The Master of Science in Computer and Communications Engineering (MCCE) program is designed to build on the student's core skills such that the student develops the engineering knowledge required to meet the demands of the computing and communications industry. The program is designed to build essential skills as well as to allow the student to select the specialized tracks that best meet the student's interests. Students who complete this program are typically employed as engineers or continue their studies as PhD candidates.

Domain of Work

Most of the graduates of this program find employment in the fields of:

- | | |
|---|--|
| <input type="checkbox"/> Communication network design and testing. | <input type="checkbox"/> Computer networking and IT |
| <input type="checkbox"/> Data science | <input type="checkbox"/> Embedded systems design and development |
| <input type="checkbox"/> Communication systems design, implementation and testing | <input type="checkbox"/> Home automation |
| <input type="checkbox"/> Information security | <input type="checkbox"/> Web programming |
| | <input type="checkbox"/> Mobile application development |

Program Educational Objectives (PEOs)

A few years after graduation MCCE graduates will:

1. Lead the development of products in the computer and communications industries.
2. Apply fundamental technical and research skills to solving new technical and scientific problems in the computer and communications domain.
3. Continue their professional development by broadening their experience, education and societal interaction.

Program Learning Outcomes (PLOs)

At the time of graduation, students are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
Core Requirements	6
CENG507 - Embedded Systems	3
ENG515 - Advanced Engineering Mathematics	3
Major Requirements	21
CENG557 - Advanced Network Architectures	3
CENG685 - Information Security	3
CENG695A - Master Thesis Project(Part I)	3
CENG695B - Master Thesis Project(Part II)	3
EENG527 - Digital Signal Processing	3
EENG537 - Digital Communications	3
EENG587 - Wireless Communication	3
General Education Electives	3
GE***** General Education Electives	3
Major Elective	22
ME***** Major Elective	22

List of Major Electives - MCCE

Course Title	Cr
CENG564 - Advanced Signal Processing with FPGA	3
CENG564L - Advanced Signal Processing with FPGA Lab	1
CENG565 - Embedded Systems and Applications	3

CENG565L - Embedded Systems and Applications Lab	1
CENG566 - Machine Learning	3
CENG566L - Machine Learning Laboratory	1
CENG625 - Cryptography & Advanced Computer Security	3
CENG631 - GPU Architecture and Parallel Computing	3
CENG643 - Distributed Systems and Network Programming	3
CENG645 - Mobile Communication	3
CENG646 - Data Mining	3
CENG655 - Queueing Theory	3
CENG657 - Advanced Network Simulation	3
CENG664 - Advanced Hardware Descriptive Language Programming	3
CENG675 - Multimedia Networks	3
CENG677 - Fiber Optics	3
CENG678 - Image Processing and Computer Vision	3
CENG679 - Satellite and Space Communications	3
CENG688 - Wireless Sensor Networks	3
EENG577 - Advanced Digital Communications	3
EENG637L - Advanced Digital Communication Lab	1
ENGG610 - Research Methods	3

4.7.2 MEENG - MS in Electrical Engineering (52 Credits)

About the program

The Master program in Electrical Engineering (Hereafter “MS EENG”) is a two-year intensive program, which includes specialized course work, Hands-on work, project work, as well as a research work. The program includes elective courses and thesis, allowing students to tailor their education to provide emphasis in a particular specialization. The program empowers the graduates with all the necessary abilities to pursue in a PhD program and/or in maintenance, development, and design activities.

Domain of Work

The graduates of the MS EENG program can work in, but limited to, the following fields:

- | | |
|---|---|
| <input type="checkbox"/> Power Generation, Transmission and Distribution | <input type="checkbox"/> Renewable Energy Sources |
| <input type="checkbox"/> Smart Grids and Super Grids | <input type="checkbox"/> Industrial Sector |
| <input type="checkbox"/> Power Electronics and Machinery | <input type="checkbox"/> Control Systems |
| <input type="checkbox"/> Construction: Electrical Wiring and Installation | <input type="checkbox"/> Contracting and Consultancy |
| <input type="checkbox"/> Transportation Industry | <input type="checkbox"/> Maintenance |
| <input type="checkbox"/> Automation | <input type="checkbox"/> Public service (Government) |
| | <input type="checkbox"/> Research & Development |
| | <input type="checkbox"/> Engineering Project Management |

Program Educational Objectives (PEOs)

A few years after graduation MEENG graduates will:

1. Practice electrical engineering profession with a high level of analytical, applied, and communication skills.
2. Function in multidisciplinary teams, demonstrate understanding of ethical responsibilities in engineering, and pursue life-long learning and professional development.
3. Engage in graduate research, industrial R&D, professional and/or education programs for gaining further training to address interdependent and complementary challenges of our society.

Program Learning Outcomes (PLOs)

At the time of graduation, students are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
Major Requirements	40
CENG695A - Master Thesis Project(Part I)	3
CENG695B - Master Thesis Project(Part II)	3
EENG500 - Industrial Systems Automation and Control	3
EENG500L - Industrial Systems Automation and Control Lab	1
EENG511 - Power System Analysis and Design	3
EENG515 - Introduction to renewable Energy	3
EENG521 - Power Distribution Systems	3
EENG561 - Power Generation and Control	3
EENG565 - Power Electronics II	3
EENG565L - Power Electronics II Lab	1
EENG571 - Power System Modeling	3
EENG611 - Power Transmission Systems	3
EENG640 - Power System Protection & Switchgear	3
EENG655 - Electric Drives	3
EENG655L - Electric Drives Lab	1
EENG691 - Graduate Seminar	1
General Education Electives	3
GE**** General Education Electives	3
Major Elective	9
ME**** Major Elective	9

List of Major Electives - MEENG

Course Title	Cr
EENG556 - Photovoltaic Energy Conversion	3
EENG601 - Advanced Systems Automation	3
EENG606 - Digital Control Systems	3
EENG621 - Power System Stability	3
EENG622 - Photovoltaic Energy Systems	3
EENG651 - Linear State-Space Control Systems	3
EENG656 - Fuzzy Logic, Systems, and Control	3
EENG665 - Power Plant Design & Construction	3
EENG666 - Wind Turbine Generating Systems	3
EENG670 - Smart Grid	3
EENG683 - Special Topics in Electrical Engineering	3
EENG686 - Economics of Renewable Energy	3
ENGG610 - Research Methods	3

4.7.3 MLENG - MS in Electronics Engineering (52 Credits)

About the program

The Master program in Electronics Engineering (Hereafter “MS LENG”) is a two-year intensive program, which includes specialized course work, Hands-on work, project work, as well as a research work. The program includes elective courses and thesis, allowing students to tailor their education to provide emphasis in a particular specialization. The program empowers the graduates with all the necessary abilities to pursue in a PhD program and/or in maintenance, development, and design activities.

Domain of Work

The graduates of the MS LENG program can work in, but limited to, the following fields:

- | | |
|---|---|
| <input type="checkbox"/> Communications | <input type="checkbox"/> Production Lines (Sensors, Data Acquisition) |
| <input type="checkbox"/> Security Systems | <input type="checkbox"/> Power Electronics |
| <input type="checkbox"/> Electronic design | <input type="checkbox"/> Control Systems |
| <input type="checkbox"/> Analog and Digital Integrated Circuit Design | <input type="checkbox"/> Contracting and Consultancy |
| <input type="checkbox"/> Mechatronics | <input type="checkbox"/> Maintenance |
| <input type="checkbox"/> Photovoltaic Energy Systems | <input type="checkbox"/> Public service (Government) |
| <input type="checkbox"/> PCB Manufacturing | |

Program Educational Objectives (PEOs)

A few years after graduation MLENG graduates will:

1. Practice electronics engineering profession with a high level of analytical, applied, and communication skills.
2. Function in multidisciplinary teams, demonstrate understanding of ethical responsibilities in engineering, and pursue life-long learning and professional development.
3. Be engaged in graduate research, industrial R&D, professional and/or education programs for gaining further training to address interdependent and complementary challenges of our society.

Program Learning Outcomes (PLOs)

At the time of graduation, students are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
Core Requirements	8
EENG500 - Industrial Systems Automation and Control	3
EENG500L - Industrial Systems Automation and Control Lab	1
EENG551 - Analog Integrated Circuit Design	3
EENG551L - Analog Integrated Circuit Design Lab	1
Major Requirements	23
CENG695A - Master Thesis Project(Part I)	3
CENG695B - Master Thesis Project(Part II)	3
EENG512 - Electronics for Communication Systems	3
EENG560 - Transducers, Sensors and Actuators	3
EENG585 - Introduction to Mechatronics	3
EENG612 - Introduction to VLSI	3
EENG612L - Introduction to VLSI Lab	1
EENG632 - Antennas	3
EENG691 - Graduate Seminar	1
General Education Electives	3
GE**** General Education Electives	3
Major Elective	18
ME**** Major Elective	18

List of Major Electives - MLENG

Course Title	Cr
CENG507 - Embedded Systems	3
CENG564 - Advanced Signal Processing with FPGA	3
CENG651 - Computer Interfacing Circuits	3
CENG664 - Advanced Hardware Descriptive Language Programming	3
CENG677 - Fiber Optics	3
CENG679 - Satellite and Space Communications	3
EENG501 - Fundamentals of Optoelectronics	3
EENG505 - Introduction to MEMS Technology	3
EENG515 - Introduction to renewable Energy	3
EENG527 - Digital Signal Processing	3
EENG537 - Digital Communications	3
EENG542 - Mixed Signal Circuit Design	3
EENG552 - Microfabrication Technology	3
EENG559 - Test of Integrated Circuits	3
EENG587 - Wireless Communication	3
EENG622 - Photovoltaic Energy Systems	3
EENG652 - RF Integrated Circuit Design	3
EENG662 - Analog Filter Design	3
EENG680 - Digital Synthesis	3
EENG688 - Special Topics in Electronics Engineering	3
ENGG610 - Research Methods	3

4.7.4 MBENG - MS in Electronics Engineering – Biomedical (52 Credits)

About the program

The Master program in Electronics Engineering – Emphasis on Biomedical Engineering (MBENG) is a two-year intensive program, which includes course work as well as a research project work. It is based on a solid foundation of science and mathematics coursework. The M.Sc. program in Biomedical Engineering is designed to produce highly motivated and trained healthcare specialists capable of using traditional engineering expertise to analyze and solve problems in biology and medicine, providing an overall enhancement of health care. The program provides excellent and exhaustive education in medical imaging, bioinstrumentation, biomaterials, clinical engineering, and signal and image processing. The program covers advanced and emerging topics such as bionanotechnology.

Domain of Work

Graduates with a Master of Science degree from the Department of Biomedical Engineering will have the potential to be practicing professional engineers who perform their profession according to the highest standards and best practices professionally and ethically. Areas where graduates with a degree from the Department of Biomedical Engineering include:

- Industry: Medical Device Design, Analysis, Marketing, Utilization, and Regulation.
- Hospital Systems and Clinical Engineering.
- Healthcare Technology Management
- Physiological Systems Analysis.
- Biomedical Engineering Research.
- Rehabilitation Engineering.
- Consulting in general engineering consulting firms.
- Advanced Technical Training.
- Education and research.
-

Program Educational Objectives (PEOs)

A few years after graduation MBENG graduates will:

1. Design and conduct experiments as well as to measure, analyze, and interpret experimental data from living systems
2. Use their multidisciplinary background to foster vital link and communication across professional and disciplinary boundaries with the highest professional and ethical standards
3. Conduct ethical, social, and professional responsibilities analysis on the practice of biomedical engineering
4. Acquire further knowledge of emerging and contemporary issues and challenges facing biomedical engineers
5. Play an effective role in research and development in various biomedical industries

Program Learning Outcomes (PLOs)

At the time of graduation, students are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
Core Requirements	9
EENG504 - Biomechanics	3
EENG554 - Biomaterials and Artificial Organs	3
EENG564 - Robotics and Telemedicine	3
Major Requirements	34
CENG695A - Master Thesis Project(Part I)	3
CENG695B - Master Thesis Project(Part II)	3
EENG514 - Computer Simulations and Modeling for Medicine	3
EENG524 - Medical Imaging II	3
EENG534 - Signal Processing for Medicine I	3
EENG534L - Signal Processing for Medicine I Lab	1
EENG574 - Medical Instrumentation II	3
EENG574L - Medical Instrumentation II Lab	1
EENG624 - Biomedical Optics	3
EENG634 - Image Processing for Medicine	3
EENG634L - Image Processing for Medicine Lab	1
EENG664 - Clinical Engineering	3
EENG674 - Medical Laboratory Instrumentation	3
EENG674L - Medical Laboratory Instrumentation Lab	1
General Education Electives	3
GE**** General Education Electives	3
Major Elective	6
ME**** Major Elective	6

List of Major Electives - MBENG

Course Title	Cr
CENG566 - Machine Learning	3
EENG544 - Rehabilitation Engineering	3
EENG614 - Bionanotechnology	3
EENG644 - Inspection and Maintenance of Medical Equipment	3
EENG654 - Healthcare Technology Management	3
EENG684 - Medical Information Systems	3

4.7.5 MIENG - MS in Industrial Engineering (52 Credits)

About the program

The Master of Science in Industrial Engineering is a two years intensive program which includes course work as well as a research project work. The program is designed to produce highly motivated and trained industrial engineers for an evolving marketplace. It focuses on providing excellent education in production planning, quality management, engineering management, operations research, optimization, engineering economics and ethical responsibility. The program is based on a solid foundation of science and mathematics coursework which is the distinctive feature when compared to business-oriented disciplines. Students in this program are given an opportunity to:

- Learn to extend their abilities to analyze and solve complex problems.
- Develop, improve, implement and evaluate integrated systems.
- Specify, predict and evaluate the results to be obtained from such systems.

This program is also relevant for graduates from other technical or specialization areas who intend to leverage existing professional or academic skills toward achieving the highest levels of responsibility and leadership within organizations.

Domain of Work

Graduates with a Master of Science degree from the Industrial Engineering department will have the potential to be practicing professional engineers who perform their profession according to the highest standards and best practices professionally and ethically. They are very likely to have job prospects in the following fields:

- | | |
|---|--|
| <input type="checkbox"/> Manufacturing and production. | <input type="checkbox"/> Systems engineering. |
| <input type="checkbox"/> Public service (Government). | <input type="checkbox"/> Quality engineering. |
| <input type="checkbox"/> Automation. | <input type="checkbox"/> Environmental and sustainability engineering. |
| <input type="checkbox"/> Optimization and operations research. | <input type="checkbox"/> Food engineering. |
| <input type="checkbox"/> Facilities, operations and logistics management. | <input type="checkbox"/> Occupational safety. |
| <input type="checkbox"/> Engineering project management. | <input type="checkbox"/> Education and research. |

Program Educational Objectives (PEOs)

A few years after graduation MIENG graduates will:

1. Apply their knowledge to the management, operations and optimization of engineering systems.
2. Design, implement and optimize integrated systems of people, materials, facilities, information, and technology.
3. Be employed as practicing engineers in fields such as design, production, development, quality, manufacturing, operations and logistics.
4. Progress through advanced degree programs in engineering, management and other professionally related fields.

Program Learning Outcomes (PLOs)

At the time of graduation, students are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

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

Curriculum

Course Title	Cr
General Education Requirements	3
ENGG650 - Engineering Profession & Ethics	3
Core Requirements	3
ENGG550 - Engineering Project Management and Control	3
Major Requirements	34
EENG500 - Industrial Systems Automation and Control	3
EENG500L - Industrial Systems Automation and Control Lab	1
IENG310L - Industrial Engineering Field Visit	1
IENG510 - Manufacturing Systems	3
IENG515 - Organizational Environments	3
IENG551L - Industrial and Manufacturing Workshop	1
IENG555 - Advanced Concepts in Quality Improvement	3
IENG560 - Infrastructure and Facilities Management	3
IENG565 - Industrial Waste Management	3
IENG570 - Occupational Safety Engineering	3
IENG615 - Operations Research	3
IENG650L - Industrial Engineering Graduate Seminar	1
IENG695A - Master Thesis Project (Part I)	3
IENG695B - Master Thesis Project (Part II)	3
Major Elective	12
ME**** Major Elective	12

List of Major Electives - MIENG

Course Title	Cr
EENG601 - Advanced Systems Automation	3
ENGG300 - Engineering Economics	3
ENGG510 - Methods of Optimization	3
ENGG600 - Engineering Entrepreneurship	3
FDSC475 - Food Engineering	3
IENG610 - Selected Topics in Industrial Engineering	3
IENG625 - Data Analysis and Decision Models	3
IENG630 - Financial Engineering	3
IENG640 - Fundamentals of Petroleum and Petrochemical Engineering	3
IENG655 - Simulation of Production and Service Systems	3
IENG665 - Oil and Gas Production Logistics	3
IENG670 - Advanced Engineering Economic Analysis	3
IENG675 - Computational Optimization	3
IENG680 - Food Manufacturing Processes	3

4.7.7 MMENG - MS in Mechanical Engineering (52 Credits)

About the program

The Master of Science program in Mechanical Engineering (MMENG) is a two-year intensive program, which includes course work as well as a research project work. The program is designed to prepare students for continued learning and successful careers in industry or academia. The graduates from the program are expected to apply their engineering knowledge, critical thinking, and problem-solving skills in professional engineering practice.

Domain of Work

Graduates with a Master of Science degree from the Mechanical Engineering department will have the potential to be practicing professional engineers who perform their profession according to the highest standards and best practices professionally and ethically. They are very likely to have job prospects in the following fields: Heating, Ventilation, and Air Conditioning (HVAC)

- Transportation
- Power Generation and Distribution
- Metal Production, Processing, and Manufacturing
- Chemical and Electrical Equipment
- Designing of Machines and Structures including the exploration of their Noise, Vibration, and Harshness (NVH).
- Education and Research.

Program Educational Objectives (PEOs)

A few years after graduation MMENG graduates will:

1. Become remarkable mechanical engineers in any specialized domain.
2. Show communication skills, soft skills, managerial skills, and leadership qualities.
3. Develop high level of technical competency to apply for higher educational degrees such as Professional Master (Master of Engineering) or PhD in any specific areas of mechanical engineering.
4. Advance their careers in areas that are related to their career and increase their understanding of emerging topics that are important to the society.

Program Learning Outcomes (PLOs)

At the time of graduation, students are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
Major Requirements	43
CENG695A - Master Thesis Project(Part I)	3
CENG695B - Master Thesis Project(Part II)	3
MENG501L - Mechanical Engineering Workshop	1
MENG510 - Stress Analysis	3
MENG520 - Fluid Mechanics II	3
MENG525 - Engineering Thermodynamics II	3
MENG530 - Mechanical Vibrations II	3
MENG550 - Mechanical Systems II	3
MENG555 - Introduction To Finite Element Analysis	3
MENG555L - Introduction To Finite Element Analysis Lab	1

MENG560 - Machine Design I	3
MENG580 - Advanced Heat Transfer	3
MENG601 - Hydraulic and Pneumatic Systems	3
MENG610 - Machine Design II	3
MENG615 - Refrigeration & Air conditioning	3
MENG615L - Refrigeration & Air conditioning Lab.	1
MENG660 - Mechanical Engineering Graduate Seminar	1
General Education Electives	3
GE***** General Education Electives	3
Major Elective	6
ME***** Major Elective	6

List of Major Electives - MMENG

Course Title	Cr
EENG585 - Introduction to Mechatronics	3
MENG585 - Solar Energy & Thermal Systems	3
MENG590 - Theory of Solid Continua	3
MENG591 - Automotive Engineering Fundamentals	3
MENG591L - Automotive Engineering Fundamentals Lab	1
MENG595 - Turbomachinery	3
MENG595L - Turbomachinery Lab	1
MENG600 - Control Theory for Mechanical Engineers	3
MENG605 - Aerodynamics	3
MENG611 - Vehicle Thermal Management	3
MENG615 - Refrigeration & Air conditioning	3
MENG615L - Refrigeration & Air conditioning Lab.	1
MENG620 - Theory of Elasticity	3

MENG621 - Automotive Body structure	3
MENG625 - Gas & Steam Turbines	3
MENG630 - Theory of Plasticity	3
MENG631 - Finite Element Methods for Crashworthiness and Impact Analysis	3
MENG631L - Finite Element Methods for Crashworthiness and Impact Analysis Lab	1
MENG640 - Theory of Shells and Plates	3
MENG641 - Vehicle Dynamics	3
MENG641L - Vehicle Dynamics Lab	1
MENG645 - Advanced Refrigeration Cycle	3
MENG650 - Advanced Finite Methods in Mechanics	3
MENG650L - Advanced Finite Methods in Mechanics Lab	1
MENG655 - Power Plant Engineering	3
MENG655L - Power Plant Engineering Lab	1

4.7.8 MSURV - MS in Surveying Engineering (52 Credits)

About the program

The Master of Science in Surveying Engineering is a two years intensive program which includes course work as well as a research project work. The M.Sc. program is designed to produce well-informed and trained professionals capable of using the taught materials in solving engineering problems. It is based on a solid foundation of mathematics and surveying applications, providing a wide information area about technologies of construction, road designs, remote sensing and photogrammetry, and including the latest technologies used in surveying engineering domain such as 3D Laser scanning technology.

Domain of Work

Graduates with a Master of Science degree from the Surveying Engineering Department will have the potential to be practicing professional engineers who perform their profession according to the highest standards and best practices professionally and ethically. Areas where graduates with a degree from the Department of Surveying Engineering include:

- Construction and consultancy projects.
- Land division studies.
- Infrastructure design.
- Engineering project management.
- Road and highway design studies.
- Real estate projects.
- Quantity survey engineering.
- Topographic and Cadastral survey.
- Photogrammetry sector.
- Education and research Program Educational Objectives (PEOs)

Program Educational Objectives (PEOs)

A few years after graduation MSURV graduates will:

1. Managing, processing, analyze and interpret geomatics and surveying engineering cases
2. Assess the impacts of ethical, social, and professional responsibilities on the practice of surveying engineering.
3. Use the latest technologies, tools and methods employed in collecting, analyzing, and reporting data.
4. Improve through advanced degree programs in engineering, management and other professionally related fields.

Program Learning Outcomes (PLOs)

At the time of graduation, students are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Curriculum

Course Title	Cr
Core Requirements	3
ENGG650 - Engineering Profession & Ethics	3
Major Requirements	37
CENG695A - Master Thesis Project(Part I)	3
CENG695B - Master Thesis Project(Part II)	3
CSCI633 - Image Processing	3
SURV500 - Geographic Information Systems II	3
SURV510 - Remote Sensing	3
SURV530 - GPS II	3
SURV560 - Advanced Digital Photogrammetry	3
SURV560L - Advanced Digital Photogrammetry Lab	1
SURV580 - Geomatics for Civil Works	3
SURV590 - Map Projection	3
SURV615 - Surveying application II	3
SURV620 - Engineering Transportation and Roads Design	3
SURV670 - Technology Of Construction	3
Major Elective	12
ME***** Major Elective	12

List of Major Electives - MSURV

Course Title	Cr
SURV512 - Hydrographic Surveying	3
SURV520 - Underground & Marine Survey	3
SURV612 - Advanced Tools in Surveying	3
SURV622 - Civil Infrastructure Design	3
SURV630 - Drainage and Irrigation	3
SURV632 - Underwater Acoustics	3
SURV640 - Geotechnical Engineering	3
SURV674 - Marine Geology	3
SURV675 - Computer Aided Drafting for Infrastructure & Road Design	3
SURV680 - Environmental Impact Assessment for Surveying Engineering	3

4.8 General Education Electives – School of Engineering

Code	Course Title	Cr
AGRS235	Landscape Horticulture	3
ARAB220	Creative Writing in Arabic	3
ARTS200	Foundation Drawing I	3
ARTS204	Introduction to Theater	3
ARTS350	Photography	3
ARTS390	Mosaic I	3
BHTM315	Business Etiquette & Protocol	3
BHTM375	International Cuisine	3
BMED210	Introduction to Community Health	3
COMM200	Introduction to Communication Studies	3
COMM255	Theories of Mass Media	3
CULT210	New World Order	3
EDUC201	Foundation of Education	3
ENVR200	Environmental Science	3
ENVR205	Environment & Health	3
ENVR320-	Global Health Challenges	3
FREN200	Elementary French	3
HIST200	Modern Japan	3
HIST205	Modern China	3
HIST245	Modern Africa	3
HIST250	Europe in the Twentieth Century	3
HIST255	International Relations in East Asia Since 1945	3
HIST260	Modern Spain	3
HIST270	Modern Latin America	3
HIST350	Contemporary World History	3
HUMN200	Community Service	3
HUMN210	Human Rights - Global Perspective	3
HUMN215	Introduction to Civic Society	3
INET01	Innovative and Entrepreneurship Startup Essentials	3
LANG200	Beginners Russian	3
LANG201	Beginners Hebrew	3
LANG212	Conversational Hebrew	3
LANG221	Introduction To Italian	3
LANG222	Introduction To French	3
LANG223	Introduction To Spanish	3
LANG224	Introduction To Deutsch	3
LANG225	Introduction To German	3
LANG227	Introduction To Chinese	3
LANG229	Introduction to Turkish	3
LANG230	Sign Language	3
LANG300	Intermediate Russian	3
NSCI200	The Universe and the Earth	3

NSCI210	Biodiversity and the Evolution of Life	3
NSCI270	Environmental Ethics	3
NUTR200	Nutrition and Health	3
PHED200	Sports and Health	3
PHIL200	Introduction to Philosophy	3
PHIL205	Introduction to Ethics	3
PHIL210	World Religions	3
POLS200	Introduction to Political Sciences	3
POLS205	World Current Affairs	3
POLS215	Modern Arab Political Thought	3
POLS230	Lebanese Labor Law	3
POLS300	Lebanese Politics	3
POLS316	Politics of Modern Syria	3
POLS440	The Arab Israeli Conflict	3
RATV200	Short Film Making	3
SES201	Soft & Entrepreneurship Skills Development	3
SPAN250	Spanish level 2	3
SSCI200	Introduction to Sociology	3
SSCI205	Introduction to Psychology	3
SSCI210	International Politics	3
SSCI215	Introduction to Music	3
SSCI220	Introduction to Anthropology	3
SSCI225	Introduction to Cultural Anthropology	3
SSCI235	The Individual and Modernity	3
SSCI250	The Cultural Landscape	3
SSCI255	Intellectual History of the Twentieth Century	3
SSCI265	Geography of the Islamic World	3
SSCI285	Gender and Global Issues	3
SSCI310	Foundations of the Social Sciences	3

4.9 Course Description – School of Engineering

CENG250 Digital Logic I (3 credits)

This course introduces the concepts of digital logic operations and design. The course teaches fundamentals of digital logic design through the use of a large number of design problems. Topics include: Boolean algebra, theory of logic functions; mapping techniques and function minimization; logic equivalent circuits and gate transformations; base conversion number notations and arithmetic; binary addition/subtraction, decoder, encoder, comparator, multiplexer and de-multiplexer circuits in combinational systems. It also teaches introductory sequential systems specifically, latches, flip-flops and the design of basic synchronous counters.

CENG325 Software Applications and Design (3 credits)

This course introduces students to various topics in designing computer applications using an object oriented approach. Engineering students completing this course will be exposed to the concept, design, implementation, debugging, and testing of object oriented programs at an intermediate level. The course is practical and applications focused allowing the student to gain essential skills in developing engineering software applications.

CENG335 Digital Logic II (3 credits)

This course is an extension of Digital Logic I. The course extends the coverage of sequential circuit concepts and building blocks with the main focus being on understanding the design of the Arithmetic Logic Unit (ALU). The course focuses on well-known problems solved by the application of digital logic design methods and components. This course also introduces the student to a hardware programming language (VHDL).

CENG352L Digital Logic Circuits Lab (1 credit)

This lab introduces experiments concerning designing, simulating and testing digital logic circuits, which uses Combinational Logic Design; Decoders and Encoders, Multiplexers, signed number notations and arithmetic; binary addition/subtraction circuits; PLA, PAL, theory of sequential circuits; timing diagrams; analysis and synthesis of D, JK, and T flip flop based sequential circuit; Design with D and JK flip-flops. The objective of this course is to cover experimentally all experiments on Com3lab boards (70017 & 70018) that are related to the topics above. After that, each group of two students should have the tools to build combinatory circuits, where those circuits will be given as small projects where each group should write down the design and complete the implementation.

CENG375 Introduction to Database Systems (3 credits)

This course offers students an introduction to the design and programming of database systems. In particular, it covers the ER (Entity-Relationship) approach to data modelling, the relational model of database management systems (RDBMS) and the use of relational algebra and query languages such as SQL to create, modify__query the database. The role of relational algebra and the use of SQL in a programming environments, such as Java and/or PHP are briefly introduced. This course will also touch upon data normalization and the role of transaction management.

CENG380 Microprocessors and Microcontrollers (3 credits)

This course introduces students to the principles of Microcontroller design and applications. Students will be introduced to the PIC microcontroller architecture, specifically the PIC 18F family. Moreover, the course introduces programming using assembly language and C. Topics introduced will include: Looping, branching, arithmetic and logical operations, timer, interrupts, Parallel I/O.

CENG400 Computer Organization and Design (3 credits)

This course introduces fundamental concepts in computer organization and digital logic design, Topics include computer arithmetic, MIPS processor design, ALU design, data path and controls, pipelining, interrupts and exceptions, memory management and cache.

CENG400L Microcontroller Applications Lab (1 credit)

This lab introduces projects concerning Microcontrollers architecture , instruction sets, and applications. Introduction to programmable PIC18F4550. Serial/Parallel Bus Interfacing with PIC. Assembly/C Language. ISIS Proteus Software: simulation. MPLAB Software: Editing, compiling, simulating and programming. C18 Compiler. Writing code programs. The functions: Timer, PWM, LCD, RTC, MCP, A/D, D/A, seven segment display. The main objective of this laboratory is to cover experimentally all the applications on the Microcontroller. It is an integral part of the preceding course, and it reinforces and complements the material covered in the course. It is designed for you to not only learn about the basic architecture of a Microcontroller, how to program them and show up their results, but in doing so; you will also use them in performing your undergraduate and graduate senior projects that allow you to have a good career.

CENG415 Communication Networks (3 credits)

This course constitutes an introduction to fundamental concepts in the design and implementation of computer communication networks, their protocols and applications (FTP, SMTP, HTTP, etc.). Topics include: overview of network architectures and topologies, applications, reliable data transfer, transport, congestion and flow control, routing, and data link protocols, addressing, local area networks. The course offers also an overview of advanced topics such as

wireless networks, and network management. Examples will be drawn primarily from the Internet (e.g., TCP, UDP, and IP) protocol suite.

CENG420 Web Programming and Technologies (3 credits)

The course focuses on the design and development of web based applications using a number of currently popular tools and technologies. Moreover, the use of database as data repositories for multitier web applications is further explored. Topics examined include: introduction to HTML and CSS, client-side scripting (JavaScript and DOM), server-side scripting, database connectivity, session tracking, HTTP headers and their use, security and privacy risks.

CENG430L Linux Lab (1 credit)

This lab course teaches scripting on modern platforms (e.g., RaspberryPi). Both Linux shell and other scripting languages (e.g. Python) are introduced. Topics covered in the lab include automation, interfacing and networking, etc...

CENG435 Mobile Application Development (3 credits)

This course focuses on the development of advanced mobile applications using Android platform. Students will be introduced to the Android environment will learn the necessary skills for creating, simulating and deploying Android applications. The topics include: Android platform installation, Android Manifest, user interfaces, data persistency, content providers, geo-locations, networking, messaging, services and deployment. Students are also exposed to business models and current trends in mobile application development.

CENG450L Scripting Languages Lab (1 credit)

This lab course teaches engineering and statistical scripting languages such as MATLAB and Scala. These languages have important applications in modelling, simulation and analysis. The lab introduces the scripting languages in a problem based approach where common modelling and analysis problems are solved by the application of algorithms written in the taught languages.

CENG455L Communication Networks Lab (1 credit)

Based on student theoretical knowledge in communication networks, this lab is designed to help them start practical experiences in Internet networking. Students will be introduced to packet tracer network simulator with which they will be able to build, configure, and manipulate a LAN, MAN and WAN networks. Moreover, students will be introduced to the major concepts of how to configure a real LAN network by running switches, routers, IPv4 and IPv6. Furthermore, basic client/server applications would be introduced and implemented.

CENG460 Operating Systems (3 credits)

This is an introductory course in operating systems for students in computer and communications engineering. The course provides a solid theoretical foundation for understanding the concepts that underlie operating systems. The approach is to learn operating systems on three levels: the user level, the application program level, and the design and implementation of operating systems. Topics include: operating system structure, process management, process scheduling, multithreading, Inter-process communication, deadlocks, concurrency control and synchronization, protection, as well as an overview of memory management and strategies used for this purpose. While the course combines theory and practice, there will be a focus on practical demonstrations and extensive hands-on programming experience.

CENG470 Data Structures and Analysis of Algorithms (3 credits)

This course introduces the students to the basics of data structures (Stack, Queues, Lists, Trees, and Graphs) and principles of algorithms and abstraction programming. Algorithms relating to sorting, searching, and selection will be studied and analyzed. Algorithm analysis includes: worst and average case analysis, recurrences and asymptotes. Algorithm design includes: divide-and-conquer and greedy algorithms.

CENG477 Industrial Networks (3 credits)

An overview of current industrial networks of Industrial Control Systems (ICS) used in lieu of specific Supervisory Control and Data Acquisition (SCADA) and other related ones. The course covers the types, design and architecture, operation, protocols, and security of ICS.

CENG480 Introduction to GIS (3 credits)

Geographic Information Systems (GIS) provide powerful analytic tools for many disciplines. Communications engineers can benefit from GIS tools in network design and planning, as well as network administration. As such, this course teaches the fundamentals of GIS with a focus on how these tools can be used by telecommunications engineers. A student who completes this course will have acquired the basic skills required to use a GIS application for the purpose of supporting telecommunications networks design and deployment.

CENG495 Senior Project (3 credits)

This project is a requirement for graduation with the B.Sc. in Engineering degree. Proposed by the supervising faculty, projects are geared towards integrating several topics covered in the curriculum. Students will have the opportunity to exercise research, experimentation, implementation and technical writing skills. Students typically work in teams; each team agrees on a project with the supervisor. The project scope must be adjusted to match at least a 3 credit load per team member. The project concludes with a demonstration, a presentation and a technical report all of which are appraised by a committee of faculty members.

CENG507 Embedded Systems (3 credits)

This course introduces the student to the development of embedded systems from the ground up. The student is introduced to advanced microcontrollers (e.g., ARM Cortex-M) platform and related application development tool chain that can be used for creating embedded systems. Design and implementation of real-time embedded systems. This is a practical, project oriented course that allows the student to gain the required skills for creating embedded systems and applications.

CENG557 Advanced Network Architectures (3 credits)

This advanced course will provide the student an outstanding knowledge of the most interesting advanced network architectures and technologies used nowadays for providing the different communication services. A good understanding of this course will also provide the student background knowledge on network design. Topics include: SONET/SDH and GFP, ATM Networks, QoS Metrics, IP QoS Generic, IP Intserv & Diffserv, Congestion Control in ATM Networks, Multi-Protocol Label Switching Architecture, Label Distribution Protocols, Optical, D35, Fibers and Components, Wavelength Routing Optical Networks, Optical Burst Switching, Broadband Access Network.

CENG564 Advanced Signal Processing with FPGA (3 credits)

This course gives insights with examples of the challenges of implementing digital signal processing systems using FPGA technology; it does this by concentrating on the high-level mapping of DSP algorithms into suitable circuit architectures. The focus is then to treat the FPGA as a hardware resource that can be used to create complex DSP systems. Thus the FPGA can be viewed as a heterogeneous platform comprising complex resources such as hard and soft processors, dedicated DSP blocks and processing elements connected by programmable and fast dedicated interconnect.

CENG564L Advanced Signal Processing with FPGA Lab (1 credit)

This Lab gives students the opportunity to investigate the "System On Chip" and practice some aspects of design and implementation on Field Programmable Gate Array (FPGA) devices. The design and implementation of a soft-core of processor on FPGA target is introduced. In practicing some experimentation using HDL and C language. Students also begin to develop some appreciation for how the software-hardware interacts with one another. An Algorithm-Architecture Adequation procedure is given where some Advanced Digital Signal Processing and Telecommunications-Based applications are designed, implemented and tested using a well defined methodology of verification and simulation. A complexity study and design optimization is discussed.

CENG565 Embedded Systems and Applications (3 credits)

This course introduces the concepts and tools required for the design and implementation of embedded systems and applications. Embedded systems make up an increasingly important part of information processing devices and continue to be expanded in terms of functionality. Embedded systems are often developed to meet specific computing requirements that are constrained in some way. This course teaches the approaches taken for the design of these systems, provides examples of how these systems are used and how the developed designs are implemented. A student who successfully completes this course is expected to be able to explain and use embedded systems as building blocks for more complex systems.

CENG565L Embedded Systems and Applications Lab (1 credit)

This course allows the student to apply the concepts learned in (Embedded Systems and Applications). Through the application of these concepts for the use of embedded systems, the student will be able to develop hands-on knowledge of what embedded systems are, how these systems can be used, and what practical problems may be encountered by an Engineer when developing these systems.

CENG566 Machine Learning (3 credits)

This course provides an introduction to machine learning topics and algorithms. Machine learning uses techniques such as optimization, statistics, and programming among others to create a system that is able to process data provide predictions without human interference. Topics included: Supervised and unsupervised learning, reinforced learning, decision trees, clustering, and pattern recognition. This course prepares students for research and industrial applications that utilize machine learning.

CENG566L Machine Learning Laboratory (1 credit)

This lab course consists of a set of experiments that implement machine learning algorithms. Software programs will be created to simulate real life applications.

CENG625 Cryptography & Advanced Computer Security (3 credits)

This course provides an introduction to the basic theory and practice of cryptographic techniques used in computer and network security. Topics include classical and advanced encryption techniques (secret-key and public-key), digital signatures, user authentication, key management, cryptographic hashing, network security protocols (SSL, TLS, IPsec, Kerberos), PKI, copyright protection, network attacks and defenses, firewalls, application security (web, e-mail, databases), viruses, social engineering attacks, privacy, digital rights management and a bit of zero-knowledge protocols. The course involves case studies and programming assignments. Therefore, students will hand on some of the security tools in use in the real world and will be involved in conducting a semester-long project.

CENG631 GPU Architecture and Parallel Computing (3 credits)

This course introduces the student to the GPU (graphics processing unit) and its architecture as well to the programming tools used to create software for execution on GPU based platforms. Parallel computing concepts are essential to GPU programming and are introduced in this course through a problem/software solution focused approach.

CENG643 Distributed Systems and Network Programming (3 credits)

The objective of this course is to introduce distributed systems and the principles to network programming. To reach this objective, the course covers different subjects including: the concepts of interprocess communication; distributed shared memory; paradigms for distributed systems and application construction; object-oriented distributed system design, middleware: basic concepts protocols and terminologies about socket programming; Applying socket programming to internet application (e.g. IRC, mail, etc); Object serialization; Remote Method Invocation (RMI) and related security issues, atomic transactions and time synchronization, concurrency, distributed algorithms for data management: clocks, deadlock detection, and mutual exclusion.

CENG645 Mobile Communication (3 credits)

This course aims to cover the breadth of topics relevant to state-of-the-art wireless communications engineering. The course deals with the fundamental cellular network concepts such as frequency reuse, duplexing, handoff, trunking and system design to maximize the number of users per unit bandwidth and unit area. Covered systems include: Global System for Mobile communications (GSM), Interim Standard 95 (IS-95), Universal Mobile Telecommunications System (UMTS) (also known as Wideband Code Division Multiple Access WCDMA), 3GPP Long-Term Evolution (LTE), and WiMAX. The course also addresses physical layer aspects, Medium Access Control (MAC) layer, networking considerations, radio resource allocation, sharing, control and management in cellular networks, Uplink and Downlink scheduling issues, as well as capacity evolution for the radio access network.

CENG646 Data Mining (3 credits)

Analyzing large amounts of data is a necessity. The problem then becomes how to analyze the data. This course gives quick introductions to database and data mining concepts with particular emphasis on data analysis. It then covers the concepts and techniques that underlie classification, prediction, association, and clustering. Analyzing large amounts of data is a necessity.

CENG651 Computer Interfacing Circuits (3 credits)

This class is a course in computer interfacing which assumes no prior knowledge of the subject. The course begins with a discussion of signal processing techniques, including topics in noise reduction, A/D converters, and digital filters. These techniques are illustrated both in hardware as well as simulated in software using the LabVIEW graphical programming environment. The course will continue with the development of data acquisition applications with Graphical User Interfaces (including pop-ups, buttons, graphics, etc) using the LabVIEW development system, and topics regarding interfacing the software systems to physics hardware devices. The hardware information will be covered in a series of class note handouts. There is a small component of the course where we discuss the inner structure of the computer, central processor units, internal command structures, and interrupt/port structures. The course will consist of lectures and lab sessions. Lectures will cover theory and will provide concrete examples that will be useful in the lab. The Lab exercises are a mandatory part of the course and compromise a large fraction of the course grade.

CENG655 Queueing Theory (3 credits)

Fundamental models include single and multiple server Markov queues, bulk arrival and bulk service processes, and priority queues. Applications emphasize communication networks and computer operations. Introduction to the performance evaluation tools used to analyze the accuracy, efficiency and scalability of a protocol, algorithm, system, network, etc. Fundamental concepts in queueing and loss models, as well as the simulation methods, with their application to modeling and analysis of computer and communication systems. Advanced techniques in network calculus, traffic models and their effects on queues are also introduced.

CENG657 Advanced Network Simulation (3 credits)

This course focuses on the development and the execution of simulations for the study of packet networks. It teaches the student the methods for defining simulation requirements, selecting metrics, identifying benchmarks, collecting results, analyzing results and extracting conclusions. The course is focused on event driven simulations for packet networks.

CENG664 Advanced Hardware Descriptive Language Programming (3 credits)

This is an advanced course in hardware language programming. It covers advanced programming techniques in addition to designing and implementing advanced signal processing and data science algorithms (e.g., adaptive filtering, encryption, artificial intelligence) on state of the art hardware platforms.

CENG675 Multimedia Networks (3 credits)

The course introduces students to multimedia systems concepts: fundamentals, theory, current practices and future trends. A brief revision of signals, LTI systems, Fourier transforms and sampling precedes an introduction to image, video, audio and graphics representation. Coding standards and compression techniques for the three media types are studied next with a focus on current practices. Topics related to content distribution and quality of service over wire and wireless

networks are discussed. The course also addresses watermarking and encryption techniques for intellectual property protection. Multimedia databases and querying techniques together with current research topics are described towards the end of the course.

CENG677 Fiber Optics (3 credits)

This course provides an introduction to fiber optics, optical networks and optical networks components. Topics include multimode fiber, photonic crystal, plastic fibers, fiber losses, and dispersion. They also include Optical network components such as transmitters, receivers, multiplexers, and switches. The course will also include modulation and demodulation processes, noise detection and system design.

CENG678 Image Processing and Computer Vision (3 credits)

This course introduces students to the core digital image processing concepts and the application of these concepts in computer vision. It focuses on the application of machine learning algorithms to computer vision. A student who successfully completes this course will have the required skills for the development and software implementation of computer vision algorithms to solve specific image related problems.

CENG679 Satellite and Space Communications (3 credits)

This course introduces the telecommunications systems used in space. The course focuses on end-to-end communications between satellite and ground stations as well as satellite-to-satellite communications. The course focuses on the synthesis of telecommunications technologies to meet the requirements of space-oriented communications. The course exposes the student to the current state of the art in this domain as well as the current challenges faced in expanding the information carrying capacity of these systems.

CENG685 Information Security (3 credits)

This course covers core concepts in developing and deploying secure information systems. The course focuses on the concepts described in international standards (such as the ISO/IEC 27000 series) for the definition, deployment, testing and integration of secure information systems. The course also guides the student through the contemporary issues related to privacy and security which are shaping the way information is being sought, created, exchanged, stored and exploited.

CENG688 Wireless Sensor Networks (3 credits)

"This is an inter-disciplinary course on the design of distributed embedded systems. The course discusses system robustness in the presence of highly variable communication delays and heterogeneous component behaviors. Moreover, the study of the enabling technologies (VLSI circuits, communication protocols, embedded processors, RTOSs), models of computation, and design methods is explored. This course analyses the modern domain-specific applications including: on-chip micro-networks, multiprocessor systems, fault-tolerant architectures, and robust deployment of embedded software. Research challenges such as design complexity, reliability, scalability, safety, and security is explored. Topics included are: communication protocols, time synchronization, localization and positioning, topology control, routing protocols, data-centric and content-based networking, quality of service."

CENG695A Master Thesis Project (Part I) (3 credits)

The Master's Project course is six credits practical and research course. The master project is spread over two semesters. Students are requested to conduct a research relevant to the field of specialty; ending up with a thesis describing methodology; applications and results. The course also includes producing a prototype of the research subject (numerical model, physical application). In addition students seek to spend a period of time in organizations specialized in the research field as a practical training.

CENG695B Master Thesis Project (Part II) (3 credits)

The Master's Project course is six credits practical and research course. The master project is spread over two semesters. Students are requested to conduct a research relevant to the field of specialty; ending up with a thesis describing methodology; applications and results. The course also includes producing a prototype of the research subject (numerical model, physical application). In addition students seek to spend a period of time in organizations specialized in the research field as a practical training.

EENG250 Electric Circuits I (3 credits)

Introduce techniques of DC circuit analysis (Node, Mesh, Superposition, & Source Transformation) containing ideal and dependent sources. Covers real power calculations, perform equivalent resistive circuits. Introduce concept of Thevenin and Norton equivalent circuits, basic concept of mutual inductance, and determine the transient responses of RL, RC, parallel and series RLC. Prerequisites: ENGL051. Co-requisites: MATH210

EENG300 Electric Circuits II (3 credits)

Introduce techniques of AC circuit analysis, containing ideal and dependent sources. Covers sinusoidal steady state power calculations, balanced three phase circuits, frequency selective circuits and two-port circuits in addition to Operational amplifiers (Op-amps).

EENG301L Electric Circuits Lab (1 credit)

The Electric Circuits Lab introduces the students to circuit simulation tools, DC circuit analysis techniques such as nodal, mesh, Thevenin, Norton, & superposition, and transient circuit analysis of RC, RL, & RLC circuits.

EENG304 Biology for Biomedical Engineers (3 credits)

This course represents an introductory level course to the organization of human life science. It treats the following subjects: molecules and cell organization, biological membranes, energy and metabolism, photosynthesis, cell division (mitosis and meiosis), DNA replication, protein synthesis, heredity, micro-organisms, tissues.

EENG350 Electronic Circuits I (3 credits)

Electrical signals and amplifier models. Semiconductors. P-N Junction: current-voltage characteristics. Diode models. Diode circuit applications. Metal Oxide Semiconductor Field-Effect Transistor (MOSFET): structure, current-voltage characteristics, DC biasing, small-signal model, MOSFET amplifiers. Bipolar junction transistor (BJT): structure, current-voltage characteristics, DC biasing, small-signal model, BJT amplifiers.

EENG350L Electronic Circuits I Lab (1 credit)

The topics covered by this Lab course are amplifier characteristics, Diode Characteristics & Circuit Applications, Zener Diode Characteristics & Circuit Applications. Also, MOSFET and BJT Characteristics and Amplifiers will be covered. Spice simulation and breadboard implementation will be used.

EENG354 Physiology for Biomedical Engineers (3 credits)

In this course the following subjects are treated: bone tissue, joints, muscular tissue, nervous tissue, spinal cord, brain, autonomic nervous system, cardiovascular system, digestive system, urinary system.

EENG354L Physiology for Biomedical Engineers Lab (1 credit)

This lab deals with the structure of the human body. It includes the study of tissues, skeletal, muscular, nervous, cardiovascular (Heart), digestive and urinary systems. It is presented using microscopic slides, human skeletal models, anatomical models, drawings, and dissections.

EENG360 Introduction to Power Systems (3 credits)

Examines power systems under balanced three phase steady state normal operating conditions; power quantities and the per unit system, power transformers, transmission line parameters, steady state operation of transmission lines, the power flow problem, control of power flow and fast decoupled power flow.

EENG370 Industrial Electronics (3 credits)

This course introduces students to the following topics: Steady-State Sinusoidal Analysis, Electronic Systems, Sensors & Actuators, Amplification, Control & Feedback, Operational Amplifiers, Diodes, Field-effect Transistors, Bipolar Junction transistors, Digital Systems, Sequential Logic, and Digital Devices. Prerequisites: EENG250. Co-requisites: EENG370L.

EENG370L Industrial Electronics Lab (1 credit)

This lab introduces experiments related to the design, implementation, and test of: DC and AC electric circuits using R, L, and C, and analog and digital electronic systems using Op-Amp, MOSFETs and BJT. Mixed signal project using sensors and/or actuators, analog and digital components. Co-requisites: EENG370.

EENG385 Signals and Systems (3 credits)

Signal and system modeling concepts; system modeling and analysis in time domain; 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.

EENG388 Electromagnetic Fields and Waves (3 credits)

This is an introductory course in Electromagnetics covering Vector analysis, Electrostatics, Magnetostatics, Maxwell's equations and Plane Wave Propagation.

EENG400 Electronic Circuits II (3 credits)

This course deals with BJTs and FETs frequency response analysis, examines operational amplifiers theory in order to discover its performance and applications, namely: Voltage summing, buffers, controlled sources, instrumentation circuits and active filters. The course also treats power amplifiers of different classes (Class: A, B, C and D). Finally, Voltage controlled oscillators, PLL and Digital to analogue converters will be also presented as well as the Analysis and design of different types of oscillators.

EENG400L Electronic Circuits II Lab (1 credit)

The topics covered by this Lab course are MOSFET and BJT frequency response, feedback amplifier operation and characteristic, oscillators and multivibrators, power amplifier DC operation, voltage and power Gain. Spice simulation and breadboard implementation will be used.

EENG404 Biophysics and Bioelectricity (3 credits)

This is an introductory course on biophysics for undergraduate students. The first part deals with properties of biologic materials. The second part treats the cellular and molecular biophysics and covers, in depth, the molecular phenomena related to biologic processes. Organ systems and the principles of physics in the processes of locomotion, blood and fluid flow, respiration, audition and vision are addressed in the third part. The fourth part deals with bioelectric phenomena such as resting and action potentials with their physical tools. Radioactivity and biologic effect of ionizing radiation will be treated in the fifth part.

EENG405 CAD Tools for Electronics (3 credits)

This course provides the students with knowledge and skills of the tools used in electronics projects. These tools are mainly for simulation, PCB and layout design. Examples of these tools are OrCAD, Multisim, Eagle, Cadence, ADS, etc...

EENG410 Power Electronics I (3 credits)

This course introduces a comprehensive overview of different power electronics components and applications. It also present converters used for DC machinery control (rectifiers, choppers) used in most applications. Their structures, switching techniques, harmonic content and performances are discussed

EENG410L Power Electronics I Lab (1 credit)

This lab introduces experiments to investigate characteristics of power devices and power conversion techniques; power diodes, transistors (BJT, MOSFET, IGBT), thyristors, DIAC, and TRIAC. The objective of this course is to cover experimentally all experiments on COM3LAB Board 7016, to simulate by using PSPICE software, and to implement power electronics circuits on a breadboard.

EENG414 Biocompatibility (3 credits)

This course covers the following topics. Biocompatibility standards including the role of material standardization and validation methods in evaluating biocompatibility, biodegradation and toxic kinetic, surface analysis of polymeric biomaterials, sterilization processes and residuals, cytotoxicity, interactions with blood, genotoxicity, carcinogenicity and reproductive toxicity, explants retrieval and analysis, assessment of biological safety, risk analysis.

EENG424 Medical Instrumentation I (3 credits)

The course covers the following topics. Basic concepts of medical instrumentation, basic sensors and principles, amplifiers and signal processing, biopotential electrodes, biopotential amplifiers, blood pressure and sound, measurement of flow and volume of blood, measurements of the respiratory system, chemical biosensors, clinical laboratory instrumentation, therapeutic and devices, electrical Safety.

EENG424L Medical Instrumentation I Lab (1 credit)

This laboratory course introduces the basic principles of medical instrumentation. The principle of operation and basic operation procedures are introduced. Basic medical instrumentation circuits are implemented and tested. Topics include: Blood pressure measurement, Heart rate monitors, Oximeters, Electromyography, Electroencephalography, Temperature monitoring, Ventilators, Doppler flow meters, and Laboratory safety.

EENG435 Control Systems (3 credits)

Introduction to Control Systems. Open and Closed-loop feedback systems. Modelling of dynamic. Block diagrams and signal flow graphs. Transient and steady state response analysis. Root-Locus analysis, stability of control systems. Control system design (Lead, Lag, and Lead-Lag compensation), Frequency response analysis techniques. PID, PD and P correctors.

EENG435L Control Systems Lab (1 credit)

The Control Systems Lab is concerned with the following topics: introducing MATLAB and its Control Systems Toolbox; plotting the pole-zero configuration in s-plane for a given transfer function; determining the transfer function for a given closed loop system in block diagram representation; plotting the unit-step response of given transfer function and finding the maximum overshoot, peak time, rise time and delay time; calibrating a PID Controller; plotting the root locus of a given transfer function and locating closed loop poles for different values of gain; plotting the bode plot of a given transfer function and finding the gain and phase margins; plotting the Nyquist plot for a given transfer function and discussing closed loop stability, gain and phase margins.

EENG440 Electric Machines I (3 credits)

Review of the mechanical and electromagnetic fundamentals such as force, torque, energy, power, Ampere's law, Faraday's law, magnetic equivalent circuit, induced voltage and the operation of linear DC machine. Real, reactive, and apparent power in ac circuits. Transformers: Types, construction, principles and operation of ideal and real single-phase transformers, turns ratio, equivalent circuit, performance characteristics, per-unit system, voltage regulation and efficiency, transformer taps, auto- transformers, three-phase transformers, instrument transformers. DC machines: Construction, commutator action, armature windings, effect of armature reaction, interpoles and compensating windings, internal generated voltage and torque equations of real DC machines, classifications, performance equations of generators and motors, starting and speed control of DC motors.

EENG447 Analog Communication Systems (3 credits)

This course provides a thorough understanding of the principles of analog communication systems for undergraduate students in electrical and computer communications engineering. The course covers basic background material on linear systems and noiseless modulation, spectral density and correlation of deterministic and random analog signals, thermal noise and white noise models, linear and angle modulation, interference, feedback demodulators, and noise effects in modulation systems. In addition, the course introduces programming applications in Matlab/Simulink.

EENG451 Measurements and Sensors (3 credits)

This course introduces the concepts of modern sensors and actuators, focuses on their working principles, as well as signal conditioning and techniques used to make full measurement systems. Topics include transfer functions, linearity,

sensitivity, accuracy and dynamic area analysis. Both analog and digital signals handling are described, as well as conversion principles between analog and digital representation. The course provides a solid foundation for subsequent measurements and experimentation. Students will understand how to collect data, analyze data, conduct basic error analysis, and design experimental systems.

EENG459 Electronic Systems (3 credits)

Opamp Applications and Limitations, Active Filters, Nonlinear Circuits, Signal Generators, Voltage References, DAC and ADC

EENG459L Electronic Systems Lab (1 credit)

Design, simulation and implementation of Electronic systems such as Opamp Applications, Filters, DAC and ADC.

EENG461 Digital Electronics (3 credits)

This course brings to the students expertise to design high-performance digital integrated circuits such as semiconductor physics, integrated circuit processing, transistor-level design, logic-level design, system-level design, testing. Also, important system-level concepts such as timing, pipelining, clock distribution, and system building blocks are dealt with in detail, but the emphasis is on transistors.

EENG461L Digital Electronics Lab (1 credit)

The aim of this lab course is to design basic digital circuits with BJT and MOS transistors. Examples of basic digital circuits are NOT, NAND, NOR, gates, etc. It covers also the characterization of the circuits such as frequency, power consumption, fan-in, fan-out, etc. Hardware equipment and simulation tools are used.

EENG465 Electrical wiring and Installation (3 credits)

This course provides students with in depth knowledge of electrical installation theory. It introduces basic rules and schemes of both domestic (Residential, office, Mall...) and industrial (Power system, Switchboard and upward...) electrical installation. It treats all types of earthing, cable sizing, protection, switchgears, lighting principals, wiring, bus bars, lightning, load calculation and make students familiar with different universal standards such NEC code, NFPA, British standard BS, French standard NFC Standard, IEC Standard.... in order to be able to design an electrical wiring map and panel board map for different projects: Industrial__residential (Hospital, manufacturer, airport, villa...).

EENG467L Analog Communication Systems Lab (1 credit)

This course introduces the principles of communication systems including spectral density of deterministic and random analog signals, thermal noise and white noise model, amplitude and angle modulation, generation and detection schemes, effects of noise, and digital transmission through the additive white Gaussian noise channel. In addition, the course will cover some programming applications in Matlab/Simulink.

EENG474 Medical Imaging I (3 credits)

This course introduces imaging methods in medicine and biology. Covered medical imaging systems include conventional X-ray, computed tomography (CT), magnetic resonance imaging (MRI), nuclear medicine (PET and SPECT), and ultrasound. Each of these modalities will be introduced from basic physical principles to the process of image formation. Basic concepts in medical image processing and analysis will also be introduced.

EENG482 Electrical Systems Simulation (3 credits)

This introductory course presents numerical techniques implemented in MATLAB/Simulink for the solution of problems encountered in electrical engineering. Some of the major topics in this course include electric circuit analysis, electric machines modeling and computation of electromagnetic fields. Students are required to use Matlab extensively, both in laboratory sessions as well as for completing assignments. In addition to teaching the students the fundamental theory associated with each topic, the course also aims to present real-world engineering power system applications. In fact, Matlab capabilities can be effectively used for programming power system analysis applications using Simulink sub-library Sim-Power-System. Students can then parameterize existing models using MATLAB variables and expressions and then design for the electrical power network in Simulink.

EENG484 Acquisition & Microcontrollers in Biomedical Engineering (3 credits)

This course examines sensors employed for biological and biomedical applications. Focus will be concentrated on the components of data acquisition systems and particularly on the sensors which represent the first element of the data acquisition chain. A broad range of biosensors, whose role is to convert information from one form of energy to electrical signals, will be introduced. In this case the final form for the information will be an electrical signal but the transducers themselves could be optical, mechanical, etc., and operate in a number of different ways (eg., capacitive, potentiometric, photonic).

EENG484L Acquisition and Microcontrollers in Biomedical Engineering Laboratory (1 credit)

This laboratory course is designed to implement biomedical signal sensing and data acquisition techniques. Experiments are designed to explore the sampling theorem including filtering and aliasing. Experiments are also designed to deal with signal conditioning and circuit trouble-shooting. Data acquisition is implemented using PIC microcontrollers, Arduino, and myDAQ. Programming is performed using LabView, Matlab, Arduino C, and Assembly

EENG491 Electric Machines II (3 credits)

This course provides students with in depth knowledge of electrical machinery theory. It teaches students the technique necessary for solving any equivalent circuit for any AC machine including Induction, Synchronous three-phase machines, and single-phase induction machines. Analysis and calculations for finding the voltage regulation and efficiency of those machines are also included.

EENG491L Electric Machines II Lab (1 credit)

This lab introduces experiments concerning designing, building, and testing the electric machines circuit that describe the principles and construction of different types of transformers, DC generators, DC motors, Control of DC motors; Speed control, braking, DC motor starters; Starting, control and testing of induction motors. Synchronous Generators; Principles and construction, equivalent circuit, tests, power and torque expression and parallel operation of alternators. Asynchronous motors; Principles and construction, starting, equivalent circuit.

EENG492 Electric Machines For Mechanical Engineers (3 credits)

This course provides students with in depth knowledge of electrical machinery theory. It introduces all types of DC and AC machines and transformers. This includes Induction, Synchronous three-phase machines, and single-phase induction machines as well as special purpose machines. Analysis and calculations for finding the voltage regulation and efficiency of those machines are also included.

EENG492L Electric Machines For Mechanical Engineers Lab (1 credit)

Electric Machines For Mechanical Engineers Lab.

EENG494 Senior Project (3 credits)

This project is a requirement for graduation with the B.Sc. in Engineering degree. Proposed by the supervising faculty, projects are geared towards integrating several topics covered in the curriculum. Students will have the opportunity to exercise research, experimentation, implementation and technical writing skills. Students typically work in teams; each team agrees on a project with the supervisor. The project scope must be adjusted to match at least a 3 credit load per team member. The project concludes with a demonstration, a presentation and a technical report all of which are appraised by a committee of faculty members.

EENG495 Senior Project (3 credits)

This project is a requirement for graduation with the B.Sc. in Engineering degree. Proposed by the supervising faculty, projects are geared towards integrating several topics covered in the curriculum. Students will have the opportunity to exercise research, experimentation, implementation and technical writing skills. Students typically work in teams; each team agrees on a project with the supervisor. The project scope must be adjusted to match at least a 3 credit load per team member. The project concludes with a demonstration, a presentation and a technical report all of which are appraised by a committee of faculty members.

EENG500 Industrial Systems Automation and Control (3 credits)

After completing this course, the student will be able to understand the PLC (Programmable Logic Controllers), which are small computers, dedicated to automation tasks in an industrial environment. The PLC's are programmable power control systems dedicated for electromechanical and electrical systems control: relay control, analog (pneumatic, hydraulic) governors, timing, measurements, control and regulation.

EENG500L Industrial Systems Automation and Control Lab (1 credit)

This lab introduces Programmable Logic Controllers__PLC's in both simulation and experimental environments. Starting with introduction and basic ON/OFF contacts, it switches to series and parallel circuits designed using the contacts. Two-way circuits are introduced, latching and self-latching circuits are discussed and impulse relays are tested. The students learn to pulse a cycle on rising or falling edge as well as designing and using timers and counters in PLC projects. Multiple "real" applications are performed containing projects controlling heat of an oven, flashing lights, memory usage, conveyor belts and star-delta motor starters. The lab also teaches the student to use WinProLadder software using both LADDER language and STEP instructions.

EENG501 Fundamentals of Optoelectronics (3 credits)

This course is designed to provide knowledge, understanding, application and analysis of: The wave nature of light and its different phenomena and applications, types and usage of wave guides, semiconductor concepts and light emitting diodes (LED's). In addition to stimulated emission devices (LASERS), PN Photodiodes, solar energy, photovoltaic devices and cells. Finally the polarization and light propagation.

EENG504 Biomechanics (3 credits)

This course provides first an introduction of a constitutive equation, stress-strain relationships, shear rate, viscous and nonviscous fluids, elasticity, linear and nonlinear viscoelasticity, etc. Certain rheological models are derived. The rheometers used to determine the rheological properties of blood are described. The biofluid mechanics in the cardiovascular system are also treated, including the biomechanics of vessels and heart. Finally, the mechanical properties of muscles, ligaments, tendons and bones are studied.

EENG505 Introduction to MEMS Technology (3 credits)

This course will combine lecture and laboratory work to provide students with a practical knowledge on the development of micro systems dedicated for a wide variety of applications. This course presents the fundamentals of modeling and analysis of MEMS with a specialized focus on electro-statically actuated systems, silicon-based integrated MEMS, miniaturization and low-cost production of sensors and actuator systems with broad applications in data storage, biomedical systems, inertial navigation, micromanipulation, optical display and micro fluid jet systems. The course covers such subjects as materials properties, fabrication techniques, basic structure mechanics, sensing and actuation principles, circuit and system issues, packaging, calibration and testing. Topics include fundamentals of solid mechanics, electrostatics, and analytical and numerical methods for analyzing multi physics systems. Students will develop a basic knowledge of Microsystems that is of sufficient depth to begin reading, understanding, modeling, and developing microsystems.

EENG511 Power System Analysis and Design (3 credits)

This course introduces a comprehensive approach when dealing with unbalanced and faulted systems using the concept of the symmetrical components. It also provides an overview of the basic electrical protection equipments and control when short circuits occur. Transient operation and stability are discussed as well.

EENG512 Electronics for Communication Systems (3 credits)

Introduction to Electronic Communication; Amplitude Modulation Fundamentals and Circuits; Frequency Modulation Fundamentals and Circuits; Digital Communication Techniques; Radio Transmitters; Communication Receivers; Multiplexing and Demultiplexing.

EENG514 Computer Simulations and Modeling for Medicine (3 credits)

This course will present a comprehensive account of the application of modeling methodology to the investigation of biological systems. The emphasis will be on an organized overview of the tools and techniques rather than the detailed mathematical structures upon which they may rely. Neural networks and Fuzzy logic operations in modeling are also treated. The course will draw examples widely from the current literature in an attempt to not only show the topical relevance of the subject matter but also to equip participants with an understanding of the diversity of domains to which the techniques and methodologies apply.

EENG515 Introduction to renewable Energy (3 credits)

This is an introductory course to the technologies of renewable energy (Wind, Solar, Biomass, Fuel cell, etc..) and their applications. Basic concepts and real-life examples will be covered throughout the course. Additional mathematical concepts will be covered such as Betz limit for wind, limit of efficiency of WEC point absorber, etc.

EENG521 Power Distribution Systems (3 credits)

Distribution system layout, distribution transformers, distribution equipment, distribution substations and distribution line construction. Also covers systems of industrial distribution, low-voltage bus way, and over current protection.

EENG524 Medical Imaging II (3 credits)

This course covers image reconstruction for both X-ray computed tomography and for nuclear medicine applications. Magnetic resonance imaging and reconstruction and imaging techniques are presented in details. Introduction to infrared medical imaging techniques. Research topics in the medical imaging domain are treated and discussed in this course.

EENG527 Digital Signal Processing (3 credits)

The objective of this course is to build a good understanding of the principles of Digital Signal Processing starting from the theoretical analysis of Discrete Time Systems up to the design and implementation of Digital Filters. Topics include: Analog to Digital Conversion, sampling, quantization, coding, Z-transform and its applications, structures for FIR and IIR systems, design and implementation of Filters using: window, frequency sampling and equiripple filter. In order to provide students with strong foundation of engineering practices and perform a practical application of the acquired knowledge, some design and simulation examples using Matlab are covered.

EENG534 Signal Processing for Medicine I (3 credits)

This course covers the basic concepts such as noise, ensemble averaging, spectral analysis: classical methods, digital filters, spectral analysis: modern techniques, time-frequency methods, the wavelet transform, advanced signal processing techniques.

EENG534L Signal Processing for Medicine I Lab (1 credit)

This laboratory course introduces the basic signal processing techniques, including an introduction to MATLAB, creation of function, digital signal processing techniques, and digital filters.

EENG537 Digital Communications (3 credits)

The course is an introduction to modern digital communications at a graduate/senior undergraduate level. It emphasizes a conceptual understanding of principles, techniques, and fundamental limits in digital communication systems. This course covers modulation for digital communications over additive white Gaussian noise (AWGN) channels; bandpass and lowpass signal representation; signal space representation of waveforms; modulation; demodulation; optimum receivers for AWGN channels; probability of error analysis; channel coding; synchronization; an introduction to digital communication through band-limited channels.

EENG542 Mixed Signal Circuit Design (3 credits)

Sampling and Aliasing. Analog Filters. Digital Filters. Data Converter SNR. Data Converter Design. Basics. Noise-Shaping Data Converters. Bandpass Data Converters. A High-Speed Data Converter.

EENG544 Rehabilitation Engineering (3 credits)

This course introduces the principles and applications of rehabilitative assessment and therapy. It covers designs, fabrication, and testing of adaptive and assistive devices with special focus on the interface of people and technology

EENG551 Analog Integrated Circuit Design (3 credits)

Integrated-circuits devices and modeling. Design of basic analog circuits, such as current sources and mirrors, differential amplifiers. Basic amplifier circuits, CMOS Opamps, opamp stability and frequency compensation. Feedback. EENG551 Analog Integrated Circuit Design Lab

EENG551L Analog Integrated Circuit Design Lab (1 credit)

Design, simulation, and layout of Analog Integrated Circuits using CAD tools.

EENG552 Microfabrication Technology (3 credits)

This course introduces the basic fabrication steps of integrated circuits and microelectronics manufacturing and processes. That includes crystal growth, silicon oxidation, photolithography and etching, diffusion and ion implantation, and finally metallization.

EENG554 Biomaterials and Artificial Organs (3 credits)

The course is focused on biomaterials and artificial organs. Indeed, the replacement__augmentation of failing human organs with artificial devices and systems has been an important element in health care for several decades. Significant advances in the biomedical technologies have continuously occurred during the previous 50 years, saving numerous lives with cutting edge technologies. The basic physiology of each system is reviewed with emphasis on identifying the bioengineering design requirements for appropriate biomaterials and organ replacement systems. This course brings together fundamental engineering and life science principles to provide a focused coverage of various classes of biomaterials, prostheses and artificial organs. It emphasizes on the properties original organ to be substituted as well as on the evaluation of the substitute. Commercially available systems are analyzed from the point of view similarity to the host, biomechanics, and size and efficiency of the device. Student will be required to design an artificial organ consistent with the above mentioned considerations.

EENG556 Photovoltaic Energy Conversion (3 credits)

This course covers an introduction to the major photovoltaic types, the I-V curves of PV systems for different types of loads, stand-alone PV system design and its cost analysis, physics of photovoltaics, analysis of PV cells, PV technologies, PV cells shading, and a specific PV application: PV-powered water pumping. The use of software to design PV systems will be considered through projects, where the outcomes of each project will be presented by students and discussed in class.

EENG557 Fiber Optics (3 credits)

To develop fundamentals of light propagation and amplification in optical fibers and digital transmission in optical fiber link. Components in fiber systems. Integrated optics. Light sources and detectors. Effect of noise on message quality is also covered.

EENG559 Test of Integrated Circuits (3 credits)

This course covers the problems and basic concepts of testing the Very Large Scale Integrated Circuits (VLSI), the design of circuits for testability (DFT), the design of built-in self-testing circuits (BIST), and the use of the IEEE Boundary Scan Standards.

EENG560 Transducers, Sensors and Actuators (3 credits)

This course explains and illustrates the principles of function and use of transducers associated with electronic circuits. Particularly, it introduces sensors and actuators constituting the main parts of transducers which are available in all aspects of control technology. Focus will be concentrated on the conversion of physical quantities into electronic signals and vice versa.

EENG561 Power Generation and Control (3 credits)

Examines the power generation characteristics, describes the economic dispatch and method of solution, and also covers the dynamic programming for solving economic dispatch and other optimization problems.

EENG564 Robotics and Telemedicine (3 credits)

This course introduces telemedicine technology, a very broad scope defined as the use of telecommunications to allow caregivers to interact with patients and/or other caregivers operating at remote locations. We first define and then discuss emerging efforts at utilizing telemedicine in ways that may be pertinent to medical and surgical practices. Economics of telemedicine practice are examined, followed by some futuristic thoughts about telemedicine in different medicine fields (Radiology, Emergency, Surgery....). The course emphasizes on current uses and application of telecommunications approaches for medical diagnosis and patient care. Thus it focuses on the status of the technology, where information and telecommunication technology has developed effective and efficient tools for delivering health services to widely dispersed populations, and has allowed for the provision of medical services to sites that are physically separated from the provider. The course examines the capabilities of this technology extension to the reach of medical

facilities and resources, promoting efficiency, productivity, improved quality of care, better communication between providers, increased beneficiary access to specialists, reduced transportation expenses, and increased cost efficiency. The course deals with Telemedicine's three areas: decision-making aids, remote sensing, and collaborative arrangements for real-time management of patients at a distance using a wireless mobile robotic technology.

EENG565 Power Electronics II (3 credits)

This course investigates the different power electronics components and applications. It present converters used for AC machinery control (Inverters and AC-AC controllers) used in most applications. Their structures, switching techniques, harmonic content and performances are discussed.

EENG565L Power Electronics II Lab (1 credit)

This lab introduces experiments to examine power devices and power conversion techniques; power diodes and circuits, diode rectifiers, power transistors, DC-DC converters (choppers), DC-AC converters (PWM inverters), thyristors and resonant pulse inverters. The objective of this course is to cover experimentally all experiments on Feedback UK, to investigate the application of the diodes, thyristors, and IGBT.

EENG571 Power System Modeling (3 credits)

Synchronous machine theory and modeling, synchronous machine parameters, constant flux linkage model, Transmission lines equivalent circuit, load modeling concepts, modeling of excitation systems, modeling of steam and prime movers.

EENG574 Medical Instrumentation II (3 credits)

This course is a natural extension of the Medical Instrumentation I course offered in the third year of the BS program. It describes the physiological basis and engineering principles of various medical equipment. It also introduces the principles of operation and the performance parameters of a wide range of instruments including recording and monitoring instruments, measurement and analysis techniques, and therapeutic equipment.

EENG574L Medical Instrumentation II Lab (1 credit)

This lab course builds on the topics covered in the EENG574 course where students are introduced to the theory, design, and main components of a variety of medical equipment (blood counters, electrosurgical units, pacemaker, defibrillators, oximeters, anesthesia machines, lithotripters, ventilators, and Hemodialysis delivery systems). This laboratory provides thorough understanding of the operation of these equipment and instructions on their calibration, and testing of their performance. In addition, students are expected to complete two term projects that provide them with hands-on experience in designing and building medical devices prototypes, and allow them to apply their knowledge of sensors, electric circuits, electric safety, and data display in a new context. Term projects' ideas are to be suggested but not forced by the lab instructor. Examples of suggested term projects are: designing and implementing a photoplethysmogram, heart beat monitor, etc.

EENG577 Advanced Digital Communications (3 credits)

This course is divided into two main parts and covers the two main functions in the digital communication system: Equalization and channel coding. The first part is focused on digital communication through band-limited channels. Topics covered include the characterization and signal design for band limited channels, the optimum receiver for channels with intersymbol interference and AWGN, and suboptimum equalization methods, namely, linear equalization and decision feedback equalization. The second part provides an introduction to lossless source coding, channel capacity for different channel models, and the channel reliability function. It treats linear block codes and their properties which includes a treatment of cyclic codes, BCH codes, Reed-Solomon codes, Convolutional codes, Turbo codes and concatenated codes. The course ends with a brief introduction to OFDM and MIMO systems.

EENG585 Introduction to Mechatronics (3 credits)

This course offers a multidisciplinary approach to analyze and design advanced engineering systems. A combination of background and competencies referring to mechanical engineering, electrical and electronics engineering, wireless communication, control and programming is developed to describe complex systems. The course is based on several concrete application cases that are analyzed in details: modern automotive electronic systems, aircraft electronic systems, biomedical applications, production lines control, etc. A brief introduction to Micro-Electro-Mechanical devices is also presented in this course.

EENG587 Wireless Communication (3 credits)

This course introduces the applications and challenges of current and envisioned wireless systems, as well as the fundamental principles underlying wireless communications. Topics include: overview of current wireless standards, wireless channels characteristics and models, path loss, shadowing, noise, interference, link budget, flat and frequency selective properties of multipath fading, capacity limits, diversity and combining techniques, multiple antenna techniques MIMO and space-time coding, multicarrier modulation and orthogonal frequency division multiplexing OFDM, spread-spectrum and frequency hopping techniques, multi-user systems.

EENG601 Advanced Systems Automation (3 credits)

This course covers detailed and systematic understanding of current automation systems, industrial robots, industrial networks, and related devices and machines. The course covers, as well, the safety and security aspects and concerns of automated systems. After the completion of this course, the students will be able to design, program, and simulate

advanced industrial PLC and robot-based systems and will be familiar with manufacturing machinery and factory assembly lines.

EENG606 Digital Control Systems (3 credits)

This course covers modeling, analysis and control of modern digital control systems. It presents their typical composition and principles of actions, design of these systems and digital implementation of controllers. Lectures will cover theory and will provide concrete examples. Covered topics include: Mathematical modeling of digital control systems using difference equation and z-transform, Analysis of systems stability and Design of controllers.

EENG611 Power Transmission Systems (3 credits)

This course is divided into two parts: electrical and mechanical design and analysis. The electrical part includes topics such as basic concepts, extended review of overhead transmission line parameters and steady state performance, underground cables and gas-insulated lines, power transmission by means of direct current. In the mechanical part, special attention is given to the construction of overhead transmission lines. Sag and tension of the cables are also included in the analysis.

EENG612 Introduction to VLSI (3 credits)

CMOS Logic, Fabrication, Verification, and Testing. MOS Transistor Theory. Delay. Power. Interconnection. Combinational and sequential Circuit Design.

EENG612L Introduction to VLSI Lab (1 credit)

This course provides basic applications in CMOS circuit design using adapted integration tools. It covers the main steps of schematic acquisition and simulation, layout placement and routing, and final check rules before fabrication. The course proposes many application examples going from a component level to a complete circuit simulation and implementation.

EENG614 Bionanotechnology (3 credits)

Introduction to nanotechnology and overview of nanoscale materials, effect of length scale on properties, introduction to bionanotechnology, challenges and opportunities associated with biology on the nanoscale, bionanotechnology systems, preparation methods for molecular nanostructures, self assembly and templating, surface patterning and fictionalization, soft lithography contrast with conventional lithography.

EENG621 Power System Stability (3 credits)

Fundamental concepts of stability of dynamic systems - State space representation – Stability of a dynamic system – Linearization – Analysis of stability - Small Signal stability of a single machine infinite bus system – Generator represented by the classical model – Effects of synchronous machine field circuit dynamics. Basic concepts related to voltage stability.

EENG622 Photovoltaic Energy Systems (3 credits)

Photovoltaic Systems examines the direct conversion of solar energy to electricity. This course provides a hands-on approach to the design and installation using national electric standards codes for grid and off grid systems of a typical photovoltaic system. Topics include photovoltaic (PV) cell physics, types of PV cells, PV system components, and PV energy storage.

EENG624 Biomedical Optics (3 credits)

The first part includes tissue optics (propagation of optical radiation in tissues, skin optics, blood optics, eye optics and optics of the hard tissues), optical sensing for diagnostics, monitoring and Raman-Spectroscopy. The second part covers laser-tissue interactions and laser treatment (laser safety, laser bio-stimulation, laser photodynamic therapy - PDT, laser applications in cosmetology, surgery, dentistry and other medical specialties).

EENG632 Antennas (3 credits)

Radiation from small antennas, linear antenna characteristics, arrays of antennas, impedance concepts and measurements, multi-frequency antennas, and aperture antennas. The student will also learn to calculate and use these metrics through the study of specific antennas such as center-fed dipoles, monopoles, loops, phased arrays, broadband antennas, Yagi antennas, traveling wave antennas, and aperture antennas. The Student will have the opportunity to use industry standard software to design a practical antenna, and use equipment to conduct some antenna measurements during the course.

EENG634 Image Processing for Medicine (3 credits)

This course aims to enable the students to develop their own imaging solutions using Matlab and Mathematica and the Biomedical Digital Image Processing application package and to give the attendees a detailed comprehensive demonstration of Matlab and Mathematica's relevant features and capabilities.

EENG634L Image Processing for Medicine Lab (1 credit)

This laboratory provides students with practical knowledge of image formation, and image processing techniques like spatial-domain filters, Fourier-domain filters, image enhancement, registration and segmentation. In this laboratory, students are expected to gain experience in these image processing techniques by practicing image processing exercises using Matlab software Image Processing Toolbox, and ImageJ software developed by the US National Institute of Health. At the end of the semester, students are expected to apply their acquired knowledge on the processing of real imaging datasets, for example, filtering out breathing noise from an MRI dataset

EENG637L Advanced Digital Communication Lab (1 credit)

This course introduces students to a wide range of topics in Communications such as Digital Communications systems, Wireless and RF communication techniques. It includes the digital modulation schemes: ASK, FSK, M-ary PSK, M-QAM and the eye diagram analysis and illustration. It also covers the Advanced Digital communication techniques related to the Equalization function, Channel Estimation, Frame Detection, Orthogonal Frequency Division Multiplex (OFDM), timing synchronization and Channel Encoding/Decoding. The students are guided through hands-on experiments in Digital communications. These experiments lay emphasis on design aspects, performance analysis of different systems, methods and techniques. This Lab is based on LabVIEW Communications System Design Suite that offers a design environment closely integrated with NI software designed radio (SDR) hardware, USRP2901, for rapidly prototyping communications systems.

EENG640 Power System Protection & Switchgear (3 credits)

Study of power system faults and application of relays for power system protection. Review of symmetrical components as applied fault currents.

EENG644 Inspection and Maintenance of Medical Equipment (3 credits)

This course covers the principles of medical equipment: operation, application; circuit and block diagrams; preventive maintenance inspections and calibrations; methods and strategies for troubleshooting medical equipment, systems and electronics components with report writing and presentations.

EENG651 Linear State-Space Control Systems (3 credits)

This course will introduce state-space methods to describe, analyze and design multivariable control systems. Different methods for solving linear time-invariant state equations will be demonstrated. Analysis of system's controllability and observability will be covered. This course will also cover different design techniques of advanced controllers including pole placement, design of servo systems, design of regulator/control systems with state observers, quadratic optimal regulator systems and robust control systems.

EENG652 RF Integrated Circuit Design (3 credits)

Matching Networks and RF Specifications. Low Noise Amplifier (LNA) Design. Mixers. RF Oscillators. Phase-locked Loops (PLL) for RF. RF Amplifiers.

EENG654 Healthcare Technology Management (3 credits)

This course provides the students with the necessary fundamentals of managing, maintaining, and/or designing medical devices used proposed for use in various healthcare settings such as hospitals related healthcare organizations. It provides the students with essential knowledge and tools to evaluate various technologies available on the market, suggest appropriate technology solutions, implement the technology and evaluate the results.

EENG655 Electric Drives (3 credits)

This course describes the basic characteristics of dc and ac electric drives and their control parameters. It examines the various methods of control, and also covers the four-quadrant drives and their control requirements as well as their applications.

EENG655L Electric Drives Lab (1 credit)

This lab covers controlled rectifiers, AC voltage controllers and static switches, DC drives (single phase, three phase and DC-DC converter drives and control of DC drives), AC drives (Induction motor drives, control of induction motors, synchronous motor drives, control of synchronous motors and stepper motor control) and gate drive circuits.

EENG656 Fuzzy Logic, Systems, and Control (3 credits)

This course is designed to provide knowledge and understanding of Fuzzy Logic Systems and Control. The course objectives are to teach the basics of fuzzy logic, to show how to use fuzzy logic, and to teach how to design a fuzzy controller. Some advanced topics on fuzzy controllers with some applications and case studies are also covered.

EENG662 Analog Filter Design (3 credits)

First- and second- order Filters. Classical low pass approximations (Butterworth, Chebyshev, ...). Frequency transformation. Sensitivity.

EENG664 Clinical Engineering (3 credits)

Clinical engineering emerged as a discipline in the latter half of the twentieth century as increasing numbers of complex electronic and mechanical medical devices entered the healthcare environment for preventive, therapeutic, diagnostic and restorative applications. The purpose of this course is therefore to provide a central core of knowledge and essential information to biomedical engineer needs to practice the profession. The goals are to help the engineer to work within the complex environment of the modern hospital. The course emphasizes on the role of the engineers who are active in the healthcare sector that have great opportunities to contribute to long-term quality enhancement by developing new techniques improving existing ones to ensure safe and effective patient care. The disciplines of clinical engineering include safety and efficacy of medical devices, healthcare technology management, quality management, professionalism and ethics, information systems, facilities, education and practice. Student will be required to develop projects consistent with the above mentioned considerations.

EENG665 Power Plant Design & Construction (3 credits)

Design and performance of power plants for the generation of electric power, cycle analysis, component design and performance, plant operation, control, economics and environmental impact. Thermodynamic and power plant cycle analysis; power plant engineering economics; fuel combustion calculations; pump & fan application engineering calculations; emission control and water chemistry.

EENG666 Wind Turbine Generating Systems (3 credits)

Material in this course will cover the principles of wind energy and wind power as well as the design and operation of different types of wind energy converters. It will also present machines for water pumping, remote area power supply and grid electricity generation. Design and economic analysis of wind energy converters will be examined, including site selection, monitoring and analysis of wind data, estimating output from wind generators and their integration into hybrid power systems

EENG670 Smart Grid (3 credits)

The course discusses the future of the renewable energy system, and the concept known as Smart Grid. The first aim is the understanding of how design, operation, and control of power systems traditionally have been considered. Integration of distributed and intermittent renewable energy requires a new paradigm, and the course gives a basis to understand and contribute to this development. Power systems, power electronics, and renewable energy merge, for example in microgrids. In addition, the course discusses the interaction between the power grid and flexible resources, and smart meters.

EENG674 Medical Laboratory Instrumentation (3 credits)

This course is designed to fill the gap in the scientific communication between biomedical engineers and physicians, to give students an understanding of how scientists with medical and scientific degrees treat tests and clinical cases in both hospital and academic settings. There will be interactive discussions with research clinicians and scientists about the challenges in the medical and biomedical field, and how a biomedical engineer can interact with the doctor to deliver the best solutions for the patient.

EENG674L Medical Laboratory Instrumentation Lab (1 credit)

This laboratory course offers practical applications to medical laboratory instrumentation equipment. Laboratory sessions include description of the equipment and their principle of operation. Regular maintenance and quality control principles are introduced. Tests are performed on controlled samples and results are interpreted accordingly. Topics discussed include: Blood Collection and Centrifuge, Electrocardiography, Hematology, Microscopy, Spectrophotometry, Spirometry, Stethoscopes, and heart sounds.

EENG680 Digital Synthesis (3 credits)

Complete IC digital design flow from schematic (physical capture__code description) to automatic layout placement and routing. VHDL language is given as a support to code basic starting blocks (adder, counter) as well as complex digital functions (ALU). Digital validation (RTL) is covered and a brief introduction to parasitics extraction and back-annotated simulations is presented.

EENG683 Special Topics in Electrical Engineering (3 credits)

Topics in Electrical engineering are chosen by the Department of Electrical and Electronics Engineering at the beginning of the semester.

EENG684 Medical Information Systems (3 credits)

This course introduces biomedical engineering students to the hospital information system (HIS) and communications technology used to manage the information flow and storage in hospital routine services. Specific topics such as Picture Archiving and Communication System (PACS), Laboratory Information System (LIS), and Radiology Information System (RIS) are discussed

EENG686 Economics of Renewable Energy (3 credits)

This course reviews the objectives, strategies and economic factors of renewable energy policies worldwide. The course examines policy drivers, including environmental impact, community service obligations and industrial/technological developments, as well as policy and financial instruments. The policies, economic analysis and strategies are illustrated with international case studies for renewable energy programs.

EENG688 Special Topics in Electronics Engineering (3 credits)

Topics in Electrical engineering are chosen by the Department of Electrical and Electronics Engineering at the beginning of the semester.

EENG691 Graduate Seminar (1 credit)

Acquaints the student with the abilities to search for up-to-date Electrical and Electronics Engineering related topics and to address them in a professional atmosphere.

EENG694A Master Thesis Project(Part I) (3 credits)

Students must select a project in one of these two areas: 1. Application of instrumentation and measurement techniques to biomedical engineering projects involving measurement, replacement and augmentation of biomedical systems. 2.

Software projects employing engineering, mathematical, and computational principles; applications include sensory and motor processing. Thesis Work related to current trends and developments in the field of biomedical engineering.

EENG694B Master Thesis Project(Part II) (3 credits)

Students must select a project in one of these two areas: 1. Application of instrumentation and measurement techniques to biomedical engineering projects involving measurement, replacement and augmentation of biomedical systems. 2. Software projects employing engineering, mathematical, and computational principles; applications include sensory and motor processing. Thesis Work related to current trends and developments in the field of biomedical engineering.

EENG695A Master Thesis Project(Part I) (3 credits)

The Master's Project course is six credits practical and research course. The master project is spread over two semesters. Students are requested to conduct a research relevant to the field of specialty; ending up with a thesis describing methodology; applications and results. The course also includes producing a prototype of the research subject (numerical model, physical application).

EENG695B Master Thesis Project(Part II) (3 credits)

The Master's Project course is six credits practical and research course. The master project is spread over two semesters. Students are requested to conduct a research relevant to the field of specialty; ending up with a thesis describing methodology; applications and results. The course also includes producing a prototype of the research subject (numerical model, physical application).

ENGG200 Introduction to Engineering (3 credits)

Introduction to Engineering is a first-year course designed to help first semester students explore the world of engineering by introducing them to what engineers do, the fundamental principles that form the basis of their work, and how they apply that knowledge within a structured design process. The course is designed to be an ideal introduction for anyone interested in exploring the various fields of engineering and learning how engineers work to solve problems. Students will be helped to decide which major within the school suits them better. The course aims to prepare students for success at LIU and beyond by teaching them important skills including: Technical problem solving and engineering design, teamwork, and communicating to diverse audience.

ENGG300 Engineering Economics (3 credits)

This course covers the fundamentals of Engineering Economics for engineering professionals to match engineering practice today. It recognizes the role of the engineer as a decision maker who has to make and defend sensible decisions. It emphasizes on the analytical consideration of money and its impact on decision making as well as on other factors such as environmental and social factors and tasks. By the end of the course students will be equipped with basic analytical skills for solving problems of an economic nature real-world example.

ENGG450 Engineering Ethics and Professional Practice (3 credits)

Engineering Profession and Ethics is a complete study course on the role of ethics in engineering in their historical, philosophical and professional contexts. The course examines the impact of ethical theories and their application to issues encountered in the engineering profession, such as employee rights, whistleblowing, safety, risk and liability, professional responsibility to consumers and employers, conflicts of interest, codes of ethics, legal obligations, environmental and social responsibility. Through the use of real and hypothetical case studies, the course focuses on developing analysis techniques and applying them to ethical problems through independent critical thinking and moral sensitivity.

ENGG500 Engineering Economics (3 credits)

Basic concepts, Interest rate, types of compounding, economic equivalence, present and future value, capital recovery, net present value, rate of return, payback period and benefit cost ratio, investment appraisal, equipment replacement and retirement, depreciation and taxes, preparation and presenting an economic feasibility study.

ENGG510 Methods of Optimization (3 credits)

This course discusses optimization methods applied to engineering problems. Problem formulation and modeling is presented. Emphasis on linear systems of equations, non-linear systems of equations, unconstrained optimization, equality-constrained optimization, inequality-constrained optimization, and heuristics.

ENGG515 Advanced Engineering Mathematics (3 credits)

This course covers core mathematical theories required by upper undergraduate__graduate engineering students. The course covers topics in operations research, graph theory, statistics and statistical inference that have a direct application to engineering applications.

ENGG550 Engineering Project Management and Control (3 credits)

This course covers the fundamentals of project management for engineering professionals. It reviews the project management framework in organizations and covers in depth the tools and techniques used in initiating, planning, executing, monitoring, controlling and concluding a project to achieve the set goals within schedule and budget targets. The discussed topics include work breakdown structure; CPM and PERT methods; resource allocation and leveling techniques; cost control and minimization; trade-off analysis in addition to lean and agile techniques. Real life engineering project cases are used to demonstrate the application of project management concepts to engineering projects. The

course is aligned with the Project Management Institute's (PMI's) Project Management Body of Knowledge (PMBOK) and helps learners to prepare for PMI certification exams

ENGG600 Engineering Entrepreneurship (3 credits)

This course provides engineering majors students with the skills necessary to succeed as an entrepreneur in the technical sector. The fundamentals of starting and operating a technology based start-up, developing a business plan, obtaining funding/financing, strategies for attracting and retaining key personnel, marketing a product__service and developing an effective accounting system are covered in this course.

ENGG610 Research Methods (3 credits)

This course teaches the core skills required for research in engineering. It provides the skills required for the identification of a problem, the generation of a hypothesis, the definition of relevant experiments, the collection and interpretation of results. The course also teaches the student how to conduct effective and focused literature surveys that can be used for the identification of research problems and hypotheses, including the ethical and contemporary issues faced by engineering researchers.

ENGG650 Engineering Profession & Ethics (3 credits)

Engineering Profession and Ethics is a complete study course on the role of ethics in engineering in their historical, philosophical and professional contexts. The course examines the impact of ethical theories and their application to issues encountered in the engineering profession, such as employee rights, whistle blowing, safety, risk and liability, professional responsibility to consumers and employers, conflicts of interest, codes of ethics, legal obligations, environmental and social responsibility. Through the use of real and hypothetical case studies, the course focuses on developing analysis techniques and applying them to ethical problems through independent critical thinking and moral sensitivity.

IENG300 Engineering Project Management (3 credits)

This course covers the fundamentals of project management for engineering professionals. It reviews the project management framework in organizations and covers in-depth the tools and techniques used in initiating, planning, executing, monitoring, controlling and concluding a project to achieve the set goals within schedule and budget targets. Real life engineering project examples are used to demonstrate the application of project management concepts to engineering projects. The course is aligned with the Project Management Institute's (PMI's) Project Management Body of Knowledge (PMBOK) and helps learners to prepare for PMI certification exams. Prerequisites: ENGL201.

IENG310L Industrial Engineering Field Visit (1 credit)

Students will conduct a field visit to an industrial facility. A report will need to be produced with focus on industrial engineering implications and observations. The course is concluded by a student presentation. Prerequisites: ENGL201.

IENG320 Introduction to Environmental Engineering (3 credits)

This course provides the basis of environmental engineering. It introduces various tools for identifying and solving sustainability oriented environmental problems. It covers the major areas of environmental engineering with particular emphasis in the areas of water and air quality, noise pollution, waste water treatment, and solid and hazardous waste management.

IENG350 Introduction to System Engineering (3 credits)

This course presents ideas and techniques for the process of designing, developing, testing, debugging, and modifying engineering systems. Topics include: Function-oriented and modular design techniques, designing for re-use and maintainability, specification, documentation, verification, validation, and quality assurance. Students will work in teams on a system related to their field of study. Prerequisites: CSCI250.

IENG360 Operations Analysis Methods (3 credits)

This course is an introduction to the fundamental methods for analyzing and designing procedures to perform operations in the workplace. Includes time and motion study, methods improvement, and workplace design. Ergonomic and safety issues associated with efficient design are presented. Prerequisites: MATH310.

IENG370 Industrial Systems Simulation (3 credits)

This is an introductory course to modeling techniques and simulation. It introduces solutions to industrial and service systems problems and challenges using process simulation to enhance organizational performance in an increasingly complex, turbulent, and uncertain industrial environment. This course uses discrete-event simulation, random number generation and testing, and the design of simulation experiments as tools to model the behavior of industrial systems for process analysis and process improvement. It is coupled with a hands-on lab that will introduce modeling concepts of a modern simulation language. Prerequisites: CSCI250, MATH310.

IENG400 Design and Analysis of Engineering Experiments (3 credits)

This is a basic course in designing experiments and analyzing the resulting data. The course deals with the types of experiments that are frequently conducted in industrial settings. The prerequisite background is a basic working knowledge of statistical methods. All experiments conducted by engineers and scientists are designed experiments; some of them are poorly designed, and others are well-designed. Well-designed experiments allow you to obtain reliable, valid results faster, easier, and with fewer resources than with poorly-designed experiments. A well-designed experiment can

lead to reduced development lead time for new processes and products, improved manufacturing process performance, and products that have superior function and reliability. Students are required to complete a term project that involves designing, conducting, and presenting the results of a statistically designed experiment. They do this in teams because this is the way that much industrial experimentation is conducted. They must present the results of this project, both orally and in written form.

IENG410 Human Factors Engineering (3 credits)

This is an introductory course to the field of human factors engineering. It is designed to introduce the principles of workplace and environmental design conformity to the physical and mental abilities and limitations of people. The students are expected to acquire proficiency and fundamental understanding of human factors that must be considered in the design and engineering of complex systems.

IENG420 Industrial Engineering Information Systems (3 credits)

The objective of this course is to provide knowledge and skills in industrial software systems management, i.e., the planning, procurement, development and integration of software systems in an industrial engineering context. The course also considers the underlying industrial processes. It prepares the student both for technology-intensive professions, e.g. system development (ERD software drawing will be used), and project management (Software like PMIS) within organizations supplying and acquiring industrial information and control systems.

IENG430 Inventory Control (3 credits)

This course introduces the modern inventory control methods and techniques. It covers the following topics: An introduction to the subject, detailed forecasting techniques focusing on exponential smoothing and moving average methods, inventory problems for single installation and independently handled items, dealing with deterministic lot sizing, safety stocks and reorder points, continuous periodic monitoring of inventory levels, coordinated replenishments, and multi-echelon inventory systems, structures and reordering policies. Additional topics related to lot sizing and practical problems connected to the implementation of inventory control systems.

IENG440 Quality Control and Reliability (3 credits)

This course defines quality and reliability and provides key concepts of probability and statistics, sampling concepts, and data presentation tools. It covers various control charts for variables and attributes and discusses process capability, measurement system analysis, error propagation, and tolerance intervals. Acceptance sampling and major concepts of experimental design are also covered. It introduces the reliability concepts, the evaluation of system reliability of series and parallel systems, K-of-N systems, and standby systems. Parameter estimation aspects for Weibull and Lognormal distributions and sampling procedures for reliability life testing are discussed.

IENG450 Industrial Engineering CAD/CAM Tools (3 credits)

This course consists of two parts: CAD (computer-aided design), 3D modeling, drawings with CATIA and CAM (computer-aided manufacturing), NC manufacturing with Surfcam. The course covers the fundamentals of computer assisted part programming of numerical controlled milling and lathe machine tools using Surfcam CAD/CAM software. Surfcam is used to create G code programs for advanced milling applications and basic turning center (lathes) operations.

IENG460 Production Planning and Control (3 credits)

The course is an introduction to production planning and control techniques and their application to designing integrated production systems. The main emphasis would be on the development and use of mathematical models and algorithms used to analyze and improve the use of material, labor, and information in production environments.

IENG470 Facilities Planning (3 credits)

This course introduces fundamental concepts in several main areas of industrial engineering such as facility planning, material handling systems, work analysis and design. Topics such as analysis and design of work space and flow, facility location and layout, material handling systems, motion and time studies and work sampling are covered.

IENG480 Manufacturing Processes (3 credits)

This course emphasizes the description, classification and analysis of manufacturing processes. Fundamentals include the casting processes and form casting processes, mold castings, powder metallurgy, metal and nonmetal fabrication processes are included. Metal forming and sheet metalworking are also covered. Manufacturing Engineering, production planning and quality control and inspection are also integrated throughout the course.

IENG495 Senior Project (3 credits)

This course integrates the knowledge acquired in the various courses of the undergraduate curriculum to an open-ended design effort and applies the knowledge gained to the solution of a contemporary engineering problem. Students improve oral and written communication skills, gain familiarity with available technical literature, and experience the life cycle of a design project within a group environment. Many projects include practice in the use of computers and relevant support software while solving a design problem. Students work together as a team to accomplish common goals and be able to participate in regional and national competitions.

IENG510 Manufacturing Systems (3 credits)

This course introduces basic manufacturing systems from design and operations perspectives. Deterministic models for single and parallel machines, flow shops and flexible shops are presented. Topics include: assembly lines, transfer lines,

production scheduling and flexible manufacturing systems. Additional topics related to current manufacturing technology and problems are also covered in this course.

IENG515 Organizational Environments (3 credits)

The course introduces the concept of organizations, their external and internal environments, organizational behavior, individuals in organizations, strategy in the workplace, group and team processes and key organizational processes along with success factors.

IENG550L Industrial Engineering Field Visit (1 credit)

Students will conduct a field visit to an industrial facility. A report will need to be produced with focus on industrial engineering implications and observations. The course is concluded by a student presentation.

IENG551L Industrial and Manufacturing Workshop (1 credit)

This workshop provides students with hands-on field experience on various aspects of mechanical workshop tools, machining, processes and best practices. As a part of this experience, students will be exposed to: milling processes, lathe machining, electrical welding, drilling, filing and gas welding. Special considerations are given to occupational health and safety standards.

IENG555 Advanced Concepts in Quality Improvement (3 credits)

This course covers foundations of modern methods of quality control and improvement that are used in the manufacturing and service industries. It focuses on the statistical process control and related subjects, such as experimental design and Taguchi method. It enforces the integration of statistical concepts into quality assurance methods. Further management-oriented topics of discussion include total quality management; quality function deployment; activity-based costing; balanced scorecard; benchmarking; failure mode and effects criticality analysis; quality auditing; vendor selection and certification; and the Six Sigma quality philosophy. Real business practice examples are used to illustrate the application of the studied concepts.

IENG560 Infrastructure and Facilities Management (3 credits)

This course covers many areas related to facilities planning management, highlighting a wide range of subject matters on the analysis, design and evaluation of manufacturing facilities and material handling systems. The topics covered include definition of facilities planning, role of product process and schedule design, flow analysis and activity relationship, capacity and space requirements planning, computer aided layout planning, material handling systems and equipment, storage and warehousing, mathematical approaches to location problems, and performance evaluation and selection among alternatives.

IENG565 Industrial Waste Management (3 credits)

This course describes the processes of industrial waste treatment and illustrates how current treatment techniques are affected by regulatory and economic constraints, scientific knowledge and tolerances. It provides the basis for a more effective method of waste treatment which is sustainable and supportive of industrial improvements by introducing the EBIC system as a system that tends to attain zero pollution. Overall, it provides valuable information for a better understanding of current practices and regulatory history and how these factors relate to the ability to complete environmental solutions to industrial waste problems.

IENG570 Occupational Safety Engineering (3 credits)

This course addresses a broad range of subjects relating to the practice of safety and provides useful practical knowledge which helps in identifying, evaluating, and controlling potential hazards that could harm people and environment such as the control of workplace hazards, occupational injuries, and diseases. It explains the safety codes, standards, ergonomics, and risk assessment and management.

IENG610 Selected Topics in Industrial Engineering (3 credits)

Subject matter will vary from term to term and from year to year. Focus will be on challenges of the contemporary industrial engineering profession.

IENG615 Operations Research (3 credits)

Operations research (OR) has many applications in science, engineering, economics, and industry and thus the ability to solve OR problems is crucial for both researchers and practitioners. Modern business managers make many decisions involving the interplay of time, money, energy, and materials. Since most business systems are complex, sophisticated decision making methods that will increase efficiency are needed. The allocation of resources can be represented and analyzed mathematically. This course is designed to equip the student with the knowledge and techniques to formulate, analyze and solve mathematical models that represent real-world problems. Being able to solve the real life problems and obtaining the right solution requires understanding and modeling the problem correctly and applying appropriate optimization tools and skills to solve the mathematical model. We will also discuss how to use EXCEL and LINDO for solving optimization problems.

IENG625 Data Analysis and Decision Models (3 credits)

This course will show you how to analyze a wide array of business planning and decision problems involving data with the help of spreadsheet models. We provide a framework for quantitative decision-making, optimal design, effective resource allocation and economic efficiency. Our framework will be used in the center of many business-related

disciplines, including marketing, finance, operations research, accounting, and economics. The class will focus both on modeling the decision problems and on implementing the designed models over the collected data. In the modeling approach, we seek to describe the essential structure of a decision problem in terms of objectives, decision variables, uncertainties, outcomes, choice criteria, and feasibility. Powerful and easy to use spreadsheet tools have been developed to assist in this process. Those covered here include: (1) Optimization tools (e.g. Solver add-in): extracting maximum value from resources and activities; exploring complex combinations of possibilities to achieve desired goals; (2) Simulation tools (e.g. Crystal Ball add-in): valuing and managing complex portfolios of risks. Prerequisites: ENGG500.

IENG630 Financial Engineering (3 credits)

Theory and applications of financial engineering. Designing, structuring and pricing financial engineering products (including options, futures, swaps and other derivative securities) and their applications to financial and investment risk management. Mathematical methodology that forms the basis of financial engineering and numerical methods in particular. Prerequisites: ENGG510.

IENG635 Food Engineering (3 credits)

Food engineering is a complete study course on the role of engineering in the food factory design, production, and calculations; in addition to storage and shelf life of a product. To fully understand that role, the different issues encountered in the food industry, such as mass balance and density, energy balance and expenditure, maximum storage volume, storage conditions, shelf life calculations and laws should be covered. Through the use of real case studies, the course focuses on developing analysis techniques and applying them to production problems through independent critical thinking.

IENG640 Fundamentals of Petroleum and Petrochemical Engineering (3 credits)

This course provides a holistic working knowledge about petroleum and petrochemical industry. It is an introduction for beginners who may be entering the profession of oil and gas industries. It gives general information about technologies and skills for future engineers in refineries. Petrochemicals, their raw materials, and the end products along with the manufacturing are either discussed, giving an overall perspective of a petrochemical plant. Different theories of unit operations and occurring problems during process are also reviewed to make engineers successful in controlling any plant.

IENG655 Simulation of Production and Service Systems (3 credits)

Modeling and analysis of systems using computer-based discrete event simulation. Principles of modeling, validation, and output analysis are developed using high-level simulation languages. Prerequisites: IENG515.

IENG665 Oil and Gas Production Logistics (3 credits)

This course covers an overview of the petroleum industry for engineers. It reviews the different steps of petroleum from formation to production. The purpose is to give students an introduction to the principles and some recommended procedures in exploration, reservoir, drilling and production engineering. The objectives of this course are for students to become familiar with exploration methods, fluids and rock properties of reservoir, drilling platform and operations, production systems and oil and gas treating facilities. It is an important hard work that combines, in one course, the essential information of four different majors in petroleum engineering.

IENG670 Advanced Engineering Economic Analysis (3 credits)

Topics include measuring economic network and economic optimization under constraints. Analysis of economic risk and uncertainty and foundations of utility functions. Prerequisites: ENGG510.

IENG675 Computational Optimization (3 credits)

This course is an introduction to non-linear programming. Models, methods, algorithms, and computer techniques for non-linear constrained and non-constrained optimization are studied. Students investigate contemporary optimization methods both by implementing these methods and through experimentation with commercial software. A course project will allow students to explore optimization methods and practical problems directly related to their interests. A computer implementation and a research presentation will be required. Prerequisites: ENGG500.

IENG680 Food Manufacturing Processes (3 credits)

The course will provide an insight on the fundamental concepts about food process engineering thermodynamics and water activity. Furthermore, it will go into the details of food preservation and processing methods such as thermal food processing, food cooling/freezing, concentration and food dehydration and drying. In addition to that, non-conventional methods of food preservation and processing such as combined methods, high pressure, high intensity ultrasound, dielectric and Ohmic heating, high-voltage electrical pulse, high intensity light pulse and UV light, magnetic field, and ionizing radiation will be discussed.

IENG695A Master Thesis Project (Part I) (3 credits)

The master thesis project is a six credits research and application course that spans over two semesters. Students are expected to develop a theoretical__an applied model in their respective field of specialization. Students should write a thesis describing the research methodology, implementation and results. The developed model might be a valid numerical simulation, a well-functioning prototype__a well-supported mathematical__scientific model.

IENG695B Master Thesis Project (Part II) (3 credits)

The master thesis project is a six credits research and application course that spans over two semesters. Students are expected to develop a theoretical__an applied model in their respective field of specialization. Students should write a thesis describing the research methodology, implementation and results. The developed model might be a valid numerical simulation, a well-functioning prototype__a well-supported mathematical__scientific model.

MENG225 Engineering Drawing & CAD (3 credits)

This course consists in two parts: 2 D and 3D. It can be defined as a tool in order to generate accurate drawings due to scales in 2 D and in 3 D. It focuses on drawings related to engineering. Drawings may be “descriptive”, describing an object__a tool,__they may represent the first step of design (Design of tools and machines).

MENG250 Statics (3 credits)

This course treats only rigid-body mechanics and forms a suitable basis for the design and analysis of many types of structural, mechanical,__electrical devices encountered in engineering. As the course name suggests, this course deals with the equilibrium of bodies that are either at rest__move with constant velocity. Therefore, this Statics course provides the students with the principles that treats the Statics of particles and rigid bodies, trusses, frames, machines; centroids, centers of gravity; and friction. Prerequisites: ENGL051. Co-requisites: MATH210.

MENG300 Dynamics (3 credits)

This course treats only rigid-body mechanics and forms a suitable basis for dynamics problems encountered in engineering. As the course name suggests, this course deals with the accelerated motion of a body. In this course the subject of dynamics will be presented in two parts: Kinematics, which treats only the geometric aspects of the motion and Kinetics, which is the analysis of the forces causing the motion. Consequently, this course focuses on Kinematics of particles; kinetics of particles: Newton’s second law, work-energy and impulse-momentum methods, moments of inertia of areas and masses. Prerequisites: ENGL051, ENGL101, MENG250. Co-requisites: MATH220.

MENG310 Engineering Material Science (3 credits)

This course presents an introduction to materials science for engineers. It tackles three keywords: science, 11 of 12 materials and engineering. The word science deals with the fundamentals of structure and classification. “Materials” deals with the four types of structural materials which are metals, ceramics and glasses, polymers and composites and with the electronic materials (semi-conductors). Finally, the word engineering puts the materials to work with discussions of key aspects of the degradation and selection of materials. Prerequisites: MENG250. Co-requisites: CHEM200.

MENG320 Engineering Thermodynamics I (3 credits)

Temperature and thermometry; equations of state for fluids and solids; work, heat, and the first law; internal energy, enthalpy, and specific heats; energy equations for flow; change of phase; the second law, reversibility, absolute temperature, and entropy; combined first and second laws; availability. Applications to a wide range of processes and devices.

MENG320L Engineering Thermodynamics I Lab (1 credit)

Different types of temperature measurement devices. Peltier thermo-electric effect. Investigation of Boyle's Law. Perfect gas law demonstrator, where the first law of thermodynamics is applied for the calculation of the heat capacity ratio of the air. Investigation of the pressure-temperature relationship for water/steam. Comparison of practical and ideal cycles on a P-H diagram and determination of energy balances for condenser and compressor.

MENG360 Mechanics of Materials I (3 credits)

This course studies the relationships between the external loads applied to a deformable body and the intensity of internal forces acting within the body. An introduction to stress, strain, and stress-strain relations and a brief discussion of mechanical properties and types of loads are presented. Separate treatments for members subjected to axial loads (normal forces), torsion, bending and transverse shear (flexure) are studied throughout this course for materials with linear-elastic behavior.

MENG360L Mechanics Of Materials I Lab (1 credit)

Determine the stress-strain diagram governing the behavior of the material from which the mechanical properties of the material under test can be extracted. These properties are mainly represented by the modulus of elasticity E, Poisson's ratio ν , percentage of elongation, moduli of resilience and toughness, yielding, ultimate and fracture__rupture strengths. Performing a twist__torque experiment to obtain/sketch the behavior of the material under test due to shear forces represented by the applied torque, and to determine modulus of rigidity G of the material.

MENG370 Fluid Mechanics I (3 credits)

Introduction, fluid properties, pressure distribution in fluid, hydrostatic forces on plane and curved surfaces, buoyancy and stability, pressure measurement. Integral relations for a control volume, mass conservation, linear and angular momentum equations, energy and Bernoulli equations. Differential relations for a fluid particles; fluid acceleration, mass conservation, linear and angular momentum equations, energy equation. Stream function, vorticity and irrotationality, frictionless irrotational flows, plane potential flows. Dimensional analysis and similarity; principle of dimensional homogeneity Pi theorem, non-dimensionalization of basic equations, modeling and its pitfalls. Flow in ducts and boundary layer flows.

MENG370L Fluid Mechanics I Lab (1 credit)

Demonstration of the pressure measurement methods. Calibration of the pressure gauges. Determining the viscosity of the fluid (water). Pressure distribution study. Measuring and studying the moment due to the fluid thrust. Measuring the fluid friction. Demonstrating the dependency of the flow on Reynold's number. Pressure distribution around airfoil.

MENG410 Mechanics of Materials II (3 credits)

This course is intended to provide the students with a comprehensive presentation of both theory and application of the fundamental principles of mechanics of materials. The course deals with deformable bodies; consequently it is based on the understanding of the physical behavior of materials under load and then modeling this behavior to develop the theory. Focusing on the importance of satisfying equilibrium, compatibility of deformation and material behavior requirements. At the end of the course, the students will be able to analyze structural and mechanical components, develop comprehensive understanding of the material of which they are made. The skills that developed in learning the analysis will be applied in design courses where students learn how to synthesize structural and mechanical components. Based on the aforementioned overview, this course will deal with the study of flexure and deflection of beams, eccentric loads, experimental determination of principal stresses, buckling of columns. Statically indeterminate problems are also covered.

MENG420 Heat Transfer (3 credits)

Introduction to basic concepts of engineering heat transfer. Steady and transient heat conduction in solids, including the effect of heat generation. Finned surfaces. Correlation formulas for forced and free convection, Design and analysis of heat exchangers. Radiation heat transfer. Problems in combined convection and radiation.

MENG420L Heat Transfer Lab (1 credit)

Linear heat conduction. Radial heat conduction. Unsteady state heat transfer. Forced convection. Concentric tube heat exchanger both for co-current and counter current flows. Radiant heat transfer and heat exchange using Stephan Boltzmann Theory.

MENG430 Mechanical Vibrations I (3 credits)

Physical systems such as vehicles suspensions, engines mounts, engines valves and airplanes wings are modeled as Discrete systems so that the equations of motions are derived using both Newton's second law, and energy methods including Lagrange formulations. This course concentrates on free vibration of damped and undamped single degree of freedom systems, harmonically excited vibration, and two degree of freedom systems and multi-degree of freedom systems. Furthermore, Multiple-degree-of-freedom systems are covered for damped and undamped cases; the symmetric Eigen value problem is used to extract the natural frequencies from the spectral matrix and Modal analysis is employed, for both free and forced response, to find the solutions of the coupled systems. Also, this course presents briefly methods of design for vibration suppression.

MENG450 Mechanical Systems I (3 credits)

This is the first course which deals with kinematics and dynamics of machinery such as Linkages. The purpose of this course is to explore the kinematics and dynamics of machinery in respect to the synthesis of mechanisms in order to accomplish desired motions__tasks, and also the analysis of mechanisms in order to determine their rigid-body dynamic behavior. These topics are fundamental to the broader subject of machine design. The topic of synthesis of mechanisms will be explored firstly. Then techniques of analysis mechanism will be investigated. It is hoped that this approach will help in developing the students' ability to design viable mechanism solutions to real, unstructured engineering problems by using a design process.

MENG450L Mechanical Systems I Lab (1 credit)

This is a tutorial of MENG450 course (Mechanical systems I). Students are brought to solve problems exploring the kinematics and dynamics of machinery. The design and synthesis of mechanisms are present in many problems in order to accomplish desired motions tasks. Other problems focus on the analysis of the kinematics of mechanisms in order to determine their rigid-body motion. Also, the rigid body dynamic behavior will be investigated in other problems by using different methods like Newton's laws and energy method. It is hoped that this tutorial will be an added value to the course that help in developing the students' ability to design viable mechanism solutions to real.

MENG470 Internal Combustion Engines (3 credits)

Basic internal combustion engine types and their operation, engine design and operating parameters, thermo-chemistry and combustion, engine cycles, gas exchange process. Engine combustion phenomena, emission and air pollution. Advanced topics and trends in combustion engine design.

MENG495 Senior Project (3 credits)

This project is a requirement for graduation with the B.Sc. in Engineering degree. Proposed by the supervising faculty, projects are geared towards integrating several topics covered in the curriculum. Students will have the opportunity to exercise research, experimentation, implementation and technical writing skills. Students typically work in teams; each team agrees on a project with the supervisor. The project scope must be adjusted to match at least a 3 credit load per team member. The project concludes with a demonstration, a presentation and a technical report all of which are appraised by a committee of faculty members.

MENG501L Mechanical Engineering Workshop (1 credit)

This workshop provides students with hands-on field experience on various aspects of mechanical workshop tools, machining, processes and best practices. As a part of this experience, students will be exposed to: milling processes, lathe machining, electrical welding, drilling, filing and gas welding. Special considerations are given to occupational health and safety standards.

MENG510 Stress Analysis (3 credits)

Plane stress and plane strain problems, Inelastic axial deformation, inelastic torsion, introduction to membranes, composite beams, curved beams, inelastic bending, shear center, absolute maximum shear stress and strain, theories of failure, fully stressed beams, the secant formula, inelastic bulking, stresses in cylinders, energy methods, Castigliano's theorem, and introduction to plates and shells are covered.

MENG520 Fluid Mechanics II (3 credits)

This is the second part of a Fluid Mechanics course in which concepts of laminar and turbulent flows around bodies immersed in a fluid stream, boundary layer, lift and drag, and flow separation are considered. Also the course introduces the use of computational fluid dynamics to solve fluid flow problems and its applications to aerodynamics. Derivation of the equations of motion for a compressible viscous fluid flow (Navier -Stokes equation) is also covered in which flow in pipes and ducts, normal shock waves are considered. Furthermore, the course presents elementary engineering estimates of the performance of turbo machines.

MENG525 Engineering Thermodynamics II (3 credits)

This is a second part of an engineering thermodynamics course in which properties of gas mixtures, air-vapour mixtures, and applications are considered. Thermodynamics of combustion processes and equilibrium are also studied. Furthermore, Energy conversion, power, and refrigeration are also covered.

MENG530 Mechanical Vibrations II (3 credits)

This is a second part of a mechanical vibrations course in which continuous systems are considered rather than discrete systems. Also, the course introduces the various techniques used in vibration control and elimination. Furthermore, the course presents methodologies of vibration testing and experimental modal analysis. Numerical means are employed to discriminate the difference between implicit and explicit techniques used in engineering vibrations. Finally, General forced response is examined for single degree of freedom systems.

MENG550 Mechanical Systems II (3 credits)

This is the second course which deals with kinematics and dynamics of machinery such as Engine Dynamics, Cams, and Gears. The purpose of this course is to study the kinematics of gear tooth theory, and design gear sets and gear trains for desired motions tasks. Explore the kinematics and dynamics of cams and followers. Integrate all the dynamic considerations into the design of the slider-crank linkage as used in the single cylinder internal combustion engine piston and pumps. Extend the design to a multi-cylinder engines. It is hoped that this course will help in developing the students' ability to design viable solutions to real, unstructured engineering problems by using a design process.

MENG555 Introduction To Finite Element Analysis (3 credits)

This course covers the fundamentals of the Finite Element Analysis (FEA) with emphasis on solid mechanics and stress analysis. The subject of finite elements is treated using variational principles such as the principle of virtual work and total potential energy. The course deals with a variety of structural components such as springs, axially loaded bars, beams under bending, two-dimensional/axially symmetric/three-dimensional continuum elements and their formulation in static and dynamic analysis.

MENG555L Introduction To Finite Element Analysis Lab (1 credit)

This course teaches students how to effectively construct mechanical model, analyze it, and interpret the results using ANSYS Program. ANSYS is commercial finite-element analysis software with the capability to analyze a wide range of different problems.

MENG560 Machine Design I (3 credits)

Philosophy of machine Design factor/reliability relationships. Contemporary fatigue design analysis, including low-high cycle fatigue (S-N diagrams and fracture mechanics), triaxial state of non-reversed stress and fatigue damage, surface failure, with applications on design case studies of relatively simple machines.

MENG585 Solar Energy & Thermal Systems (3 credits)

Review of heat transfer, extraterrestrial and available solar radiation, transmission and absorption of radiation, design of flat plate collectors, concentrating collectors and energy storage..

MENG591 Automotive Engineering Fundamentals (3 credits)

Overview of primary automotive systems. Engine types and configurations, combustion, emission control, vehicle performance. Power train, suspension, frame and chassis. Materials and fabrication issues. Engine and vehicle dissection laboratory. Identification of industry issues and trends.

MENG591L Automotive Engineering Fundamentals Lab (1 credit)

Automotive Engineering Fundamentals Lab. Coreq: MENG591.

MENG595 Turbomachinery (3 credits)

Turbomachines (steam and gas turbines) have a great importance in the field of energy production. It is necessary for actual mechanical engineer to understand the basic principles of theory and operation of axial turbines and compressors. In this course the stage theory is given, which includes the principles of energy conversion in turbine and compressor stages, also the geometric and aerodynamic characteristics of the blade row and nozzles. The processes undergoing in the multistage turbines and compressors are given as well as the design of turbine and compressor elements. During this course students will be able to accomplish thermal and aerodynamic calculations of the turbine and compressor stages. A briefing note on the centrifugal turbomachines theory is given

MENG600 Control Theory for Mechanical Engineers (3 credits)

Control systems concepts, linear modeling and analysis of response and stability of physical systems, complex variables and Laplace transforms, frequency, and transient response analysis and performance specifications.

MENG601 Hydraulic and Pneumatic Systems (3 credits)

Fundamentals of fluid power technology: hydraulic fluids, hydraulic pipes, pumps, hydraulic cylinders and cushioning devices, motors, valves. Hydraulic circuit design and analysis. Hydraulic conductors and fittings. Ancillary hydraulic devices. Pneumatics: Air preparation, components, circuits and applications. Basic and advanced electrical controls for fluid power circuits. Fluid logic control systems.

MENG610 Machine Design II (3 credits)

The principles of machine design and the design of machine elements. Major emphasis is placed on reliability, fatigue and fracture design using a case study approach. Design topics are selected from bearing lubrication, springs; fasteners, flexible machine elements and power transfer systems (shafts, keys, couplings, and gears).

MENG615 Refrigeration & Air conditioning (3 credits)

Introduces the Psychrometric properties of air & Psychrometric processes. Thermal Comfort, Estimation of the overall heat transmission coefficients of building sections construction, load calculations and types, types of duct distribution systems, and equipment selection. Introduces duct designing, layout, installing and adjusting of duct systems. Grille & diffuser types & selection. Studies refrigeration theory, characteristics of refrigerants, temperature, and pressure refrigeration systems, system components, compressors, evaporators, metering devices.

MENG655 Power Plant Engineering (3 credits)

The variable load problem; power plant economics; steam power plant; gas turbine and diesel power plants; hydro-electric power plant, nuclear power plant.

MENG660 Mechanical Engineering Graduate Seminar (1 credit)

Acquaints the students with the abilities to search for up-to-date Mechanical Engineering related topics and to address them in a professional atmosphere.

MENG695A Master Thesis Project(Part I) (3 credits)

The Master's Project course is a six credits practical and research course. The master project is spread over two semesters. Students are requested to conduct a research relevant to the field of specialty; ending up with a thesis describing methodology; applications and results. The course also includes the realization of a prototype of the research subject (numerical model, __physical application).

MENG695B Master Thesis Project(Part II) (3 credits)

The Master's Project course is a six credits practical and research course. The master project is spread over two semesters. Students are requested to conduct a research relevant to the field of specialty; ending up with a thesis describing methodology; applications and results. The course also includes the realization of a prototype of the research subject (numerical model, __physical application).

SURV251 Introduction to Surveying Engineering (3 credits)

This course is an attempt to break the ice between fresh surveying students and surveying instruments. Therefore, it tries to develop an understanding between different types of surveying measurements and the related various types of surveying instruments: tapes, electronic distance meters, levels, theodolites, total stations, Global Positioning Systems ...etc.

SURV251L Introduction to Surveying Engineering Lab (1 credit)

This course aims to develop students an understanding of the basic concepts relating to the measurement of land and the use of maps and site plans A practical application of the study, theory and field methods of route and topographic surveying, Introduction to using chaining, stadia, leveling, transit. The objective of this lab is to orient the student to linear measurements, become familiar with measurement techniques and their applications, compare the relative accuracy of different techniques, and learn the principles of keeping notes. Utilization of computers and software for data collection, reduction, analysis, and presentation.

SURV305 Surveying I (3 credits)

This course treats the basics of surveying and basis for topographical problems encountered in surveying engineering. As the course deals the earth (earth and universe, earth size measurements, spheroid, spherical triangles), methods of surveying and mapping (introduction, classical ground surveys, aerial surveys, and global position system), mathematical

review (function, derivative, differential of a function), and theory of error (statistics and probabilities, types of error accidental errors and calculations, accidental error for indirect measurements, measurements of different reliability. Angular measurements and instruments (definitions, instruments errors of angular measurements). Distance measurements (definitions and types, direct measurements. behavior of systematic error in direct measurements methods and equipments for indirect measurements reduction of distances to projection plan), leveling and instruments (definitions, methods of leveling), execution of surveying works (basic net work, calculation principles), areas calculations (regular and irregular figures).

SURV305L Surveying Practice I Lab (1 credit)

This course aims to develop students an understanding of the basic concepts relating to the measurement of land and the use of maps and site plans A practical application of the study, theory and field methods of route and topographic surveying, Introduction to using chaining, stadia, leveling, transit. The objective of this lab is to orient the student to linear measurements, become familiar with measurement techniques and their applications, compare the relative accuracy of different techniques, and learn the principles of keeping notes. Utilization of computers and software for data collection, reduction, analysis, and presentation.

SURV315 Geology (3 credits)

This course is designed for the Survey engineering students (non-science students) to understand the Earth processes and phenomena. This course is designed in eight parts and twenty five chapters. The first part starts with defining geology and its principal branches. It deals with cosmology; the origin of earth and planets. Students will make a journey to the earth core and will be introduced to the Plate tectonic theory. In the second part students will learn about different types of Rocks (metamorphic, igneous and sedimentary). Part three will deal more about earth dynamics (volcanism, earthquakes, and mountains building). The fourth part would be dedicated for studying the biography of the Earth and the ways and methods for dating the rock age. While part five is about earth resources (Energy & Mineral). Part six will handle the Processes and Problems at the Earth's Surface, students would be exposed to the notion and processes of mass movements, the geology of running water, oceans and coast, groundwater, atmosphere, climate, deserts, and glaciers. Part seven, on the other hand, deal with the art of making and reading geological maps in addition to performing the stratigraphical column and cross sections. Last and not least Part eight will have an over view on the Geology of Lebanon and its related processes.

SURV325 Cartography (3 credits)

Basic concepts of cartography, geographical maps, types and proprieties, cartographical expression and representation, map realization, earth surface, earth representation.

SURV335 Surveying Drawing & CAD (3 credits)

Procedure and methods of topographical planes drawing. Topographical symbols (sign convention), axing and briefing on planes survey, drawing scales, traverses surveys, plotting. Surveys of existing buildings. Contouring, leveling, location of contours by cross- section method, elevations, area and volumes.

SURV355 Surveying II (3 credits)

Introduction, branches of surveying, earth surface determinations. Introduction about geodesy. Ellipsoid and Geoids. Mapping of earth surface. Properties of plane representation, properties of conform representation. Mapping procedures used in topography. Surveying instruments. Determination of surveying points net work (azimuth, surveying intersection, three points problem, traverse). Leveling instruments. Surveying of details (side shots- abscissa and ordinates, lateral oblique). Representation of relief (Methods used, construction of contour lines). Longitudinal profile- cross sections- earth world).

SURV355L Surveying Practice II Lab (1 credit)

An intermediate lab course covering the equipment (theodolite, electronic distance measurement, total station), techniques and hardware of the profession necessary to measure horizontal and vertical angles and distances used in traversing, according to prevailing and applicable professional standards. Study of the measurement and determination of boundaries, areas, shapes, and location through traversing techniques. Instruction in a variety of adjustment methods using programmed and non-programmed hand-held calculators and computers.

SURV365 Geodesy I (3 credits)

Basic concepts of geodesy. The gravity field of the system of natural coordinates. Approximating the natural system. The geoids, the ellipsoid, basic surface geometry.

SURV375 Topometric Calculus I (3 credits)

General concepts on topometrical calculus- resolution of triangles, point coordinates rabatment. Radiation.

SURV385 Computer Aided Drafting for Surveyors (3 credits)

Softdesk introduction, DTM settings, surface, site, contour, section, DTM tools and profile.

SURV405 Photogrammetry (3 credits)

Introduction to photorammetry, introduction the photographic negative and its optical and chemical elements, the relief constitution, aerial photography, analogical stereophotogrammetry. The modem stereophotogrammetry. Digital

photogrammetry, aerial triangulation, mapping from space, multi-sensor aerial triangulation, integration aerial and satellite imagery, the role of features in photogrammetric operations.

SURV414 Cadastral Surveying and Construction LAW (3 credits)

Cadastral surveying refers to those surveys involving the definition of land boundaries and requires a thorough knowledge of the current system for the registration of land. The majority of survey graduates will have some involvement with cadastral surveying during their career, if not for the whole of their careers, and must be introduced to the underlying principles as early as possible.

SURV420 Surveying application I (3 credits)

Summer training for field surveying application. Determination of surveying points net work (azimuth, surveying intersection, three points problem, and traverse). Leveling instruments. Surveying of details (side shots- abscissa and ordinates, lateral oblique). Representation of relief (Methods used, construction of contour lines). Longitudinal profile- cross sections- earth world).

SURV425 Topometric Calculus II (3 credits)

Polygonal development, Straight line and curve problems, acreage, surface division. Implantation.

SURV435 Theory of Measurement Errors (3 credits)

Generality, measurements in surveying, random errors, characteristics, notions of probability, precision and accuracy, relative precision, accuracy ratio, least square method, weighted measurement, and weights by repeated measurements, adjustment of net work and level net work. Concepts of measurement and error, error propagation and error linearization, reanalysis of survey in measurements, applications in plane coordinate surveys, adjustment of several geodetic net works.

SURV445 Geodesy II (3 credits)

Computation of distance on earth surface, rigidity of geodesy net works, engineering and location conditions in net works. Geodesy cal triangles, triangles scales. The geometry of spheroid, geodesic lines. First and second fundamental problems spheroid, normal sections. Datum problems.

SURV455 Geographic Information Systems I (3 credits)

Introduction, origin, field of applications, methods of capturing and storing data, coordinate system, and data analyses. Coordinate projection, geo-referencing.

SURV465 Spatial Geodesy (GPS I) (3 credits)

Introduction, overview of GPS, reference systems satellites orbits, observables, the DOP factors, errors in GPS, the direct and reverse problems, satellite signal structure.

SURV474 Urban Planning and Land Subdivision (3 credits)

This course is aimed at providing those who will work in allied professions with knowledge of planning principles and practice, and the major planning issues confronting urban societies at the beginning of the 21st century. The course begins with a study of the evolution of urban and regional planning theory and practice, with an emphasis on urban design. This is followed by a review of current planning processes as they are applied at capital, regional and local areas in Lebanon. The course concludes with a discussion of the major urban planning and design issues that will need to be resolved in the coming years.

SURV477 Land Design and Site Development (3 credits)

This course focuses on learning the fundamentals of landscape design drawing necessary to graphically communicate design ideas. Students will learn techniques to improve line quality, lettering, sketching, rendering and drawing layout. This course describes the site planning and design process used to develop a project which fulfills facility requirements and creates the optimal relationship with the natural site, with an interest in the pre-construction and pre-land division process, including market analysis, site planning, development law and finance.

SURV478 Quality Control and Quantity Surveying (3 credits)

This course explains role of quantity surveying for different engineering works (cross-sectional areas and volumes and railways, quantity surveying for buildings); Mass-haul diagram; Legal aspects of engineering public works, general and special conditions; Settlement of disputes; Professional ethics; Specifications of construction materials and projects according to different standards; Project management (Chart method, CPM, and PERT methods), exercises and computer applications.

SURV479 Cadastral Information Surveying (3 credits)

The aim of the course is to provide students with the knowledge about the nature and basic principles of functioning land cadaster, cadastral surveying and land information system (LIS). The connections of land cadaster with other land information systems will be explained and the experience of information search will be obtained. The course will be helpful for students to understand the role and importance of land cadaster and land information systems for the land administration particularly and for society in general. This course describes the legal status of land and real property, land policy, land management, land tenure; Land registration and cadaster: principles, registration systems, cadastral maps; Boundaries: concepts, types, legal force, establishment and maintenance of a cadasters; Transactions, boundary re-

establishment, correction orders, cadastral surveys, land information systems; Land valuation; Multipurpose cadaster; Data protection, accuracy, criteria for success; future vision.

SURV495 Senior Project (3 credits)

This project is a requirement for graduation with the B.Sc. in Engineering degree. Proposed by the supervising faculty, projects are geared towards integrating several topics covered in the curriculum. Students will have the opportunity to exercise research, experimentation, implementation and technical writing skills. Students typically work in teams; each team agrees on a project with the supervisor. The project scope must be adjusted to match at least a 3 credit load per team member. The project concludes with a demonstration, a presentation and a technical report all of which are appraised by a committee of faculty members.

SURV500 Geographic Information Systems II (3 credits)

Design and operation of GIS, concepts of GIS, spatial data management systems, geoprocessing, data base management systems, 3D methods.

SURV510 Remote Sensing (3 credits)

Remote sensing principle, infrared and microwave radiation, collectors, geometry of image, Radiometric corrections, remote sensing applications.

SURV512 Hydrographic Surveying (3 credits)

This course provides students with knowledge of the basic concepts underlying hydrographic surveys and the production of nautical charts. The basic knowledge of the subject, recalling general principles of Bathymetry and Water Level and Flow, recalling general principles of data acquisition, control, approximation and errors estimation during Hydrographic Data Management. The main focus is on hydrography, navigation, hydrographic survey and Oceanography. Students will develop an appreciation of the concepts of coordinates, measurement, underwater acoustics, positioning, sounding, and different sources of hydrographic data and information.

SURV520 Underground & Marine Survey (3 credits)

The goal of this course is to explain the methods and the tools used to establish the surveying inside the tunnels, the off-shore surveying, and the connection between this work and that accomplished on the Earth surface. introduction to marine survey , marine maps , marine course , Echosounders and depth measurements, combining echosounders and GPS observation , production of marine maps

SURV530 GPS II (3 credits)

Coordinate system in GPS, differential GPS positioning, future of GPS. Geodetic and surveying applications of GPS.

SURV550 Image Processing (3 credits)

Introduction to image processing, multi-scale analysis, inverse problem in remote sensing, lower resolution systems, introduction to numerical photogrammetry.

SURV560 Advanced Digital Photogrammetry (3 credits)

Camera calibration ,Scan correct , digital image enhancement ,Aerial triangulation, correlation and automatic point matching Automatic, block adjustment , analytical stereomodel, 3D stereo data collection, Digital elevation model, Automatic DTM generation, Automatic production of contour lines, rectification, Orthophotography, Automatic production of orthophoto, mosaicking ,photogrammetric map production process.

SURV560L Advanced Digital Photogrammetry Lab (1 credit)

Using a digital photogrammetric work station , data handling , Aerial block generation , camera calibration , measuring tie points, measuring ground control points, block adjustment, stereo data collecting, automatic DTM generation, rectifying , orthorectifying, mosaicking and generation of orthophoto maps, map compilation.

SURV580 Geomatics for Civil Works (3 credits)

Specific applications of the principles and techniques introduced in earlier surveying courses are applied to a range of engineering projects in this course. The main emphasis, however, will be on the practical application of this knowledge in practical projects. Linear measurements- field work practice. Leveling, Angular measurement , building setting out, building surveys, roads works- curve calculation, roads works- setting out, drain and pipelines, height tension electricity. Hydrographic survey.

SURV590 Map Projection (3 credits)

Theory and classification of map projection, proprieties of different types of projection, distortion in map projection, arc to chord connection, and convergence of the meridians.

SURV612 Advanced Tools in Surveying (3 credits)

This course defines the advanced technologies in surveying that have revolutionized the speed, accuracy, and coverage of surveying and mapping by using different capture methods, drones (UAV) and 3D laser scanners. Focus on technologies that provide multiple new tools to be used in 3D Building Information Modeling (BIM) and Virtual Design and Construction (VDC), as well as 3D laser scanning which can be used in large areas such as roadways, bridges, and industrial facilities. Other platforms for scanning include aerial (UAV) and mobile LiDAR for close photogrammetry, which can rapidly map large areas, such as facility exteriors and transportation corridors and since it provides a high accuracy and high degree of details of ground features in a short time.

SURV615 Surveying application II (3 credits)

The practice of surveying has been subjected to dramatic technological changes in the last twenty years; theodolites and steel bands have been replaced by one-man total stations and/or GPS receivers, log tables and simple adding machines by hand-held programmable calculators and/or computers and set squares and drafting tables by computer aided drafting, printers and plotters. All of this new equipment is designed to complete a variety of tasks. They all have limitations and most importantly of all they must all be calibrated so that the results that they provide are correct. Surveyors must be aware of the limitations of the equipment that they use. They must know how to calibrate the equipment and understand how to utilize it in the most effective way.

SURV620 Engineering Transportation and Roads Design (3 credits)

Urban transportation planning, public transportation planning, traffic engineering, traffic characteristics, pedestrians, parking. Traffic accident and safety, road classification, traffic management, transport and environment. Traffic noise, traffic pollution, environment oriented transportation planning. This course introduces students to the concept of road location with particular emphasis on the design of the geometric elements of the road including horizontal and vertical curves. The course is comprised of two components; theory of road design and design by CAD. It is expected that students understand the interpretation of a surveyor's field book for plan production and correct standards of plan presentation. The CAD component is an introduction for the student to the flexibility and capability of a civil engineering/surveying design software packages. Traffic volume. Cross section. Highway alignment.

SURV622 Civil Infrastructure Design (3 credits)

This course provides students the knowledge in municipal piping design, layout and analysis. Students learn to prepare detailed designs of storm, sanitary sewer systems and water distribution piping systems. Major topics include fluid hydraulic principles, pressure piping design considerations, gravity piping analysis, storm water flow computation, wastewater flow rate, and preparation of servicing design plans. Local municipal piping infrastructure management techniques are also discussed in this course. Road design, and drainage system design which are generally part of cities urban development and strategic planning will be covered in this skillset.

SURV630 Drainage and Irrigation (3 credits)

Definitions, underground hydraulic applied to draining, fixing dimensions of a draining net work, conception of a draining project, hydraulic of a surface irrigation system, design of a border, furrow and controlled flooding irrigation. Hydraulics of sprinkler and drip irrigation systems design aspects. Definitions, underground hydraulic applied to draining, fixing dimensions of a draining net work, conception of a draining project, hydraulic of a surface irrigation system, design of a border, furrow and controlled flooding irrigation. Hydraulics of sprinkler and drip irrigation systems design aspects.

SURV632 Underwater Acoustics (3 credits)

This course contains fundamentals of underwater acoustics, Acoustic wave generation, propagation of acoustic wave in the water, Sound speed and refraction, Scattering and refraction, Noise and directivity, reflection, target scattering and noise in a rigorous and standardized mathematical framework, Echo reception and detection, Acoustic devices, and Acoustic applications. Explains sonar equation and acoustics for survey equipment.

SURV640 Geotechnical Engineering (3 credits)

This course informs the student about the basic studies of kinds of structural building, the different works such as steel, electrical, mechanical works... and treats some calculations of stresses and (.....) in different members of the construction. This course will also provide to the student the necessary reconnaissance to read the execution maps and control its application on site. The surveyor will have the possibility to interfere with the civil engineer on site for measurement and quantity surveying.

SURV670 Technology Of Construction (3 credits)

The main goal of this course is to give an idea about the connection between the surveying engineer and the civil engineer, on the site in the following fields: the soil mechanics, the building components, the construction materials of the buildings and the roads (such as the floors, the panels, the roofing, the frame works, the bituminous materials,....), the steel, and the piles. The objective of this course to train the students in various techniques in the construction of buildings, especially cost efficient techniques to develop Competencies in assisting supervisors, engineer's and Contractors and prepare them self for self employment

SURV674 Marine Geology (3 credits)

Marine Geology focuses on an integrated view of sea floor to characterize marine floors and underlying layers with features, bedforms, sediments, structures and morpho-dynamics of the ocean basin.

SURV675 Computer Aided Drafting for Infrastructure & Road Design (3 credits)

This program emphasizes practical hands-on construction practices in building and civil infrastructures. Instruction includes current building construction practices, civil infrastructure construction standards using AutoCAD Civil 3D software. Students will be able to define the relationship between the BIM (Building Information Management) and the infrastructure, design and modify roads and infrastructure networks and study the conflicts between infrastructure networks.

SURV680 Environmental Impact Assessment for Surveying Engineering (3 credits)

The aim of the Module is to provide understanding of EIA and confidence with its application and limitations. Broadly the objectives are for students to: appreciate the purpose and role of EIA in the decision-making process; understand the strengths of EIA in regard to environmental management; understand the technical and social/political limitations of EIA; know the administration and procedures that apply in the student's jurisdiction; understand the screening process; understand the scoping process and how it is applied; know the options for estimating environmental and social impacts; know the format of an EIA Report (Environmental Impact Statement, Environmental Statement); appreciate the factors that assist, and detract, from the usefulness of the EIA Report; Understand the purpose of developing follow-up procedures, and the options for designing these procedures.

SURV695A Master Thesis Project(Part I) (3 credits)

This project may be registered for in the last semester before graduation. The project is intended to apply the student's total formal knowledge to a real problem at the appropriate professional level. In this sense it will develop and test the ability to define and analyze the problem, to develop solutions to the problem, to make the necessary decisions, convert ideas into useful outcomes and to cope with the unexpected problems encountered in testing and evaluation. All of this must be accomplished against a tight timescale within resource limitations and with due regard for safety, social and ethical considerations. In short, the project is a good test of overall ability in engineering surveying GIS. The project is intended to apply the student's total formal knowledge to a real problem at the appropriate professional level. In this sense it will develop and test the ability to define and analyze the problem, to develop solutions to the problem, to make the necessary decisions, convert ideas into useful outcomes and to cope with the unexpected problems encountered in testing and evaluation. All of this must be accomplished against a tight timescale within resource limitations and with due regard for safety, social and ethical considerations. In short, the project is a good test of overall ability in engineering surveying GIS.

SURV695B Master Thesis Project (Part II) (3 credits)

This project may be registered for in the last semester before graduation. The project is intended to apply the student's total formal knowledge to a real problem at the appropriate professional level. In this sense it will develop and test the ability to define and analyze the problem, to develop solutions to the problem, to make the necessary decisions, convert ideas into useful outcomes and to cope with the unexpected problems encountered in testing and evaluation. All of this must be accomplished against a tight timescale within resource limitations and with due regard for safety, social and ethical considerations. In short, the project is a good test of overall ability in engineering surveying GIS. The project is intended to apply the student's total formal knowledge to a real problem at the appropriate professional level. In this sense it will develop and test the ability to define and analyze the problem, to develop solutions to the problem, to make the necessary decisions, convert ideas into useful outcomes and to cope with the unexpected problems encountered in testing and evaluation. All of this must be accomplished against a tight timescale within resource limitations and with due regard for safety, social and ethical considerations. In short, the project is a good test of overall ability in engineering surveying GIS.

5 School of Arts and Sciences

5.1 Vision

The School of Arts and Sciences aims to be a recognized leading destination for students seeking an experience that will transform them into holistic beings, to be men and women of aptitude, conscience, and commitment, while being responsive to the needs of our community and the region.

Through our graduate programs, research centers and collaborations, the School also aspires to become an important research establishment where students can develop critical thinking expertise and effective research and communication skills that are essential for the economic and social development of our society.

As a dynamic and intellectually vibrant community of Artists, Scientists, and Educators, we prepare our students to lead productive, positive, and successful lives by developing their skills, personality, creativity, and critical thinking abilities.

5.2 Mission

As an academic central unit of the Lebanese International University (LIU), the School of Arts and Sciences' mission is to enhance the lives of its students and nurture their intellectual and creative growth through its curriculum, research, and creative scholarship. The school offers undergraduate and graduate programs in the Arts and Sciences and is committed to advanced research in all majors. We also serve all other schools within LIU, hence playing a primary role in all fields of studies.

We encourage our students to dream big, to think critically and scientifically, to be creative and imaginative. We encourage Student-Faculty interaction through independent and collaborative practices in order to inspire life-long learning, personal success, and social engagement. This fosters a community that values the cultivation of knowledge, sharing and ethical development.

The School of Arts and Sciences Consists of the following departments/programs:

- 1. Department of Biological and Chemical Sciences:**
 - Bachelor of Sciences in Chemistry
 - Bachelor of Sciences in Biochemistry
 - Bachelor of Sciences in Biology
- 2. Department of Nutrition and Food Sciences:**
 - Bachelor of Sciences in Nutrition and Dietetics
 - Bachelor of Science in Food Science Technology
 - Masters in Food Technology
- 3. Department of Computer Science and Information Technology:**
 - Bachelor of Sciences in Computer Science
 - Bachelor of Sciences in Information Technology
 - Masters of Science in Computer Science
- 4. Department of Fine Arts and Design:**
 - Bachelor of Arts in Interior Design
 - Bachelor of Arts in Graphic Design
- 5. Department of Communication Arts:**
 - Bachelor of Arts in Communication Arts / Journalism
 - Bachelor of Arts in Communication Arts / Advertising
 - Bachelor of Arts in Communication Arts / Public Relations
 - Bachelor of Arts in Communication Arts / Radio and Television
- 6. Department of Biomedical Sciences:**
 - Bachelor of Science in Biomedical Science
- 7. Department of Mathematics and Physics:**
 - Bachelor of Sciences in Mathematics
 - Bachelor of Sciences in Physics
 - Masters in Applied Mathematics

5.3 Admission Requirements

5.3.1 Admission Requirements - Undergraduate Program (Sciences Majors)

Application for admission should be submitted before the end of September of each year. However, applicants may be assessed and selected at any time of the year based upon their Lebanese Baccalaureate II and/or their Grade 12, American System, examination results and University Placement Tests (UPTs) results. Furthermore, Applicants to the undergraduate programs in the School of Engineering are subjected to the following general conditions:

4. Have earned a recognized high school diploma, Baccalaureate II, Lebanese System, or its equivalency that is either a freshman in Sciences or in Arts or foreign secondary High School equivalent.
5. A candidate should have earned the Lebanese Baccalaureate with an overall average of at least 50%; the categories of the Lebanese Baccalaureate are listed below:
 - f) General Science
 - g) Natural Science
 - h) Sociology and Economics
 - i) Humanities
 - a) Baccalaureate Technique (BT) (as per Ministry Decision 779/2013), with the additional remedial courses according to major:
 - i. Biological Sciences Majors: BIOL160, CHEM160, MATH100, AND PHYS160.
 - ii. Science Majors (CHEM, CSCI, CSIT, MATH, PHYS): CHEM160, MATH161, AND PHYS161.
 - j) TS (Technical Superior) and LT (License Technique) (as per Decree 8590/2012)
6. A Lebanese Baccalaureate holder is exempted from a particular University Placement Test (UPT) if and only if the relevant course had been passed with 50 % and above

Table 16: Placement Criteria - Biology, Bio-Chemistry, Biomedical, Nutrition, and Food Sciences majors

Subject	Score	Placement
English	0 - 30	ENGL051 Basic English Skills
	31-40	ENGL101 Introduction to Oral and Written Skills
	41-49	ENGL151 Advanced Writing Skills
	50 and Above	Exempted from ENGL051, ENGL101, and ENGL151
Chemistry	Below 49	CHEM160 (Freshman Chemistry II, 3 Credits)
	50 - above	Exempted
Biology	Below 49	BIOL160 (Freshman Biology II, 3 Credits)
	50 - above	Exempted

Table 17: Placement Criteria - Computer Science and Information Technology majors

Subject	Score	Placement
English	0 - 30	ENGL051 Basic English Skills.
	31-40	ENGL101 Introduction to Oral and Written Skills
	41-49	ENGL151 Advanced Writing Skills
	50 and Above	Exempted from ENGL051, ENGL101, and ENGL151
Mathematics	0 - 24	MATH161 (Basics of Mathematics, 6 Credits)
	25 - 49	MATH160 (Calculus I, 3 Credits)
	50 - above	Exempted

Table 18: Placement Criteria – Chemistry, Mathematics, and Physics Majors

Subject	Score	Placement
English	0 - 30	ENGL051 Basic English Skills.
	31-40	ENGL101 Introduction to Oral and Written Skills.
	41-49	ENGL151 Advanced Writing Skills.
	50 and Above	Exempted from ENGL051, ENGL101, and ENGL151.
Mathematics	0 - 24	MATH161 (Basics of Mathematics, 6 Credits)
	25 - 49	MATH160 (Calculus I, 3 Credits)
	50 - above	Exempted
Physics	0 - 24	PHYS161 (Basics of College Physics, 6 Credits)

	25 - 49	PHYS160 (College Physics, 3 credits)
	50 - above	Exempted
Chemistry (Not for MATH major)	Below 49	CHEM160 (Freshman Chemistry II, 3 Credits)
	50 - above	Exempted

The passing grade of the aforementioned English and scientific remedial courses is either Pass (*P*) or Non-Pass (*NP*) in which the passing grade cannot be less than 50%.

LIU English Hierarchy versus TOEFL Scale: The Lebanese International University (LIU) takes on TOEFL Scale as a benchmark to place applicants in various English levels. Based on the results of English Placement Test (EPT), students may be placed in English Remedial courses according to the Table 6 in section 2.7 above.

5.3.2 Admission Requirements – Undergraduate Program (Arts Majors)

Candidates applying for the Departments of Arts (Communication Arts and Fine Arts and Design) are required to sit for an English Placement Test (EPT). However, Lebanese Baccalaureate holders who have scored 450 on the English part of SATI, 510 on the paper based TOEFL Placement Test (EPT) and 5.0 on IELTS or any corresponding international exams will be exempted from English. Otherwise, the students would be placed in English level according to the Assessment of University Placement Tests (UPT). The result a candidate earns in the University English Placement Test is compared to Table 19 and the candidate is placed accordingly.

Table 19: Placement Criteria - Arts majors

Subject	Score	Placement
English	0 - 30	ENGL051 Basic English Skills
	31-40	ENGL101 Introduction to Oral and Written Skills
	41-49	ENGL151 Advanced Writing Skills
	50 and Above	Exempted from ENGL051, ENGL101, and ENGL151

The passing grade of the aforementioned remedial courses is either Pass (*P*) or Non-Pass (*NP*) in which the passing grade cannot be less than 50%.

5.3.3 Admission Requirements - Graduate Program (Sciences Majors)

Applications for admission in a master program should be submitted before the end of September of each year. However, applicants may be assessed and selected at any time of the year based upon their Bachelor degrees. However, applicants to graduate program in the departments of Sciences must complete all required forms for admission as well as submit official transcripts from all colleges and Universities attended. If a student is expelled from another institution the basis of admission would be the undergraduate degree and no courses are transferred.

The Lebanese International University Students

Students who have earned their Bachelor degrees from *LIU* are accepted in Master programs if and only if their Cumulative Grade is at least 75%. If the students' cumulative Grade is between 70% and 74%, students may be admitted to the program on academic probation.

Non-Lebanese International University Students

Applicants who have earned their Bachelors' degrees from other Universities accredited by the Lebanese Ministry of Education and Higher Education and wish to continue their graduate study at *LIU* must fulfill the following requirements:

1. Applicants must hold a Bachelor degree (or equivalent academic qualification from a recognized institution) with minimum cumulative Grade of 80% or an equivalent Grade according to other grading systems.
2. If cumulative Grade is between 75% and 79%, students may be admitted on academic probation. Students who are accepted on probation who do not maintain a minimum Grade of 80% after completion of 9 credits will be dismissed from the program.

3. Applicants' level of English knowledge is evaluated according to the International TOFEL or *LIU* English placement test (EPT). For admission into a graduate study program, the acceptable score on these exams is determined by the recommendation of the department administration and the acceptance of the Graduate Admission Committee.

5.3.4 Transfer Students - Course Transfer Criteria (Sciences majors)

Courses taken at Universities, accredited by the Lebanese Ministry of Education and Higher Studies, are transferable by The Lebanese International University. Course transfer criteria adopted by the School of Arts and Science are as follows:

- a. Transfer of undergraduate credits from other institutions to LIU should not exceed 49% of total required credits, and not more than 50% of the major courses; the remaining 51% of credits must be taken at LIU.
- b. Transfer of graduate credits from other Universities to LIU should not exceed 33% of total required credits; the remaining 67% of total credits must be taken at LIU.
- c. A candidate who earned a Bachelor degree in Science and wishes to continue his/her masters but in a different field of science is subjected to take some remedial courses specified by the department where he/she wishes to continue his/her graduate studies.
- d. Undergraduate and Graduate transferable courses are subject to passing grades shown in Table 20 below:

Table 20 - Courses Transfer Requirements

System	Transferrable Grade Undergraduate	Transferrable Grade Graduate
American System	70% and Above	80% and above
French System	50% and Above	70% and above

5.3.5 Transfer Students - Course Transfer Criteria (Arts majors)

Courses, taken at universities and technical schools (T.S. and L.T) and accredited by the Lebanese Ministry of Education and Higher Education, are transferable by The Lebanese International University (*LIU*) in accordance with course transfer criteria adopted by the School of Arts and Sciences as follows:

- a. Transfer of undergraduate credits from other institutions to The Lebanese International University should not exceed 49% of total required credits, and not more than 50% of the major courses; the remaining 51% of credits must be taken at *LIU*.
- b. Transferable courses are subject to passing grades shown in Table 21 below:

Table 21 - Courses Transfer Requirements

System	Transferrable Grade Undergraduate
American System	70% and Above
French System	50% and Above

5.4 Graduation Requirements

5.4.1 Undergraduate Programs (Sciences Majors)

An undergraduate student in the Bachelor of Science can only graduate upon the fulfillment of the program requirements, as indicated below:

- a. A minimum of 18 credit hours of General Education.
- b. A minimum of 99 credit hours in total. The total credits might vary from one department to another.
- c. A minimum Cumulative Grade of 70%.

Moreover, Biomedical Science and Nutrition graduating students are also required to achieve a minimum grade of 70% or above in selected courses within their major courses as specified by the department concerned.

Bachelor Degree in the Science program in Nutrition, Food Science and Technology, Physics, Mathematics, Biology, Biochemistry, or Chemistry

- a. A minimum of 18 credit hours of General Education.
- b. A minimum of 36 credit hours in Core Requirements.
- c. A minimum of 30 credit hours in Major Area Requirements.
- d. A minimum of 99 credit hours in total.
- e. A minimum Cumulative Grade of 70%.

Bachelor Degree in the Science program in Computer Science and Information Technology

- a. A minimum of 18 credit hours of General Education.
- b. A minimum of 29 credit hours in Core Requirements.
- c. A minimum of 34 credit hours in Major Area Requirements.
- d. A minimum of 100 credit hours in total.
- e. A minimum Cumulative Grade of 70%.

Bachelor Degree in the Science program in Biomedical Science

- a. A minimum of 18 credit hours of General Education.
- b. A minimum of 38 credit hours in Core Requirements.
- c. A minimum of 38 credit hours in Major Area Requirements.
- d. A minimum of 105 credit hours in total.
- e. A minimum Cumulative Grade of 70%.

5.4.2 Graduate Program (Sciences Majors)

A graduate student in the School of Arts and Sciences can only graduate upon the fulfillment of the program requirements, as indicated below:

- a. A minimum of 36 credit hours.
- b. A 6 credit Research Thesis, or a 3 credit Research Project.
- c. A minimum Cumulative Grade of 80%.
- d. At least two years of residency.

5.4.3 Undergraduate Program (Arts Majors)

An undergraduate student in the Bachelor of Arts or in Communication Arts program can only graduate upon the fulfillment of the program requirements, as indicated below:

Bachelor Degree in the Arts program (Graphic Design and Interior Design)

- a. A minimum of 18 credit hours of General Education.
- b. A minimum of 36 credit hours in Core Requirements.
- c. A minimum of 39 credit hours in Major Requirements.
- d. A minimum of 99 credit hours in total.
- e. A minimum Cumulative Grade of 70%.

Bachelor Degree in Communication Arts program

- a. A minimum of 18 credit hours of General Education.
- b. A minimum of 45 credit hours in Core Requirements.
- c. A minimum of 30 credit hours in Major Area Requirements.
- d. A minimum of 108 credit hours in total.
- e. A minimum Cumulative Grade of 70%.

5.5 Program of Study – Undergraduate programs (Sciences Majors)

5.5.1 CHEM - BSc in Chemistry (99 Credits)

About the program

The Bachelor of Science in chemistry program strives to promote academic and personal excellence among its chemistry graduates in various chemistry-related careers by providing them with the fundamental concepts of chemistry, necessary lab experiences, analytical, critical thinking, and oral communication skills. The chemistry curriculum ensures that the students possess personal and social skills to be mature successful and effective members in their society.

Domain of Work

Graduates with a B.S. degree in chemistry acquire a scientific background for one of the below career options:

- Graduate school and research in academic and industrial labs.
- Employment in the area of food science, agricultural research, and pharmaceutical industries.
- Lab assistants and technicians in university and chemical analysis labs.
- Teaching chemistry at high schools

Program Educational Objectives (PEOs)

The main objectives of the B.S. in Chemistry Program are:

1. Provide students with the basic concepts in the different chemistry disciplines to enable them have a better insight of the molecular world and the rules that govern its interactions.
2. Train students to use the different lab instruments and acquire the necessary lab skills and safety practices.
3. Enroll students in academic and extracurricular activities that help them to acquire the necessary oral & social communication skills to ensure success in their future careers and social life.
4. Provide students with the necessary skills that enable students to apply their acquired theoretical & practical knowledge, analytical & problem-solving skills to design research, face challenges and develop solutions for emerging problems in their future careers and in the society.

Program Learning Outcomes (PLOs)

Completing of the B.S. in Chemistry Program, graduates will be able to:

1. Demonstrate knowledge of the main chemical principles, processes and theories in the different fields of chemistry.
2. Describe and interpret the macroscopic and experimental observations using the basic foundations of chemistry and the acquired analytical, scientific reasoning and problem-solving skills.
3. Design & carry out lab experiments using the acquired lab skills, safety practices and knowledge in lab instrumentation theory and functioning.
4. Interpret experimental results using the acquired analytical skills, critical thinking, computer programs and scientific literature.
5. Communicate scientific results and observations with the scientific community orally or via written scientific reports.
6. Illustrate the importance and role of chemistry in the different disciplines and its relation with other branches of science.
7. Respect and appreciate the ethical and professional values and appreciate collaborative teamwork.
5. Show awareness of the duties and the responsibilities of chemists toward the society and the scientific community.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	45
BMKT300 - Marketing Theory and Principles	3
CHEM200 - General Chemistry	3
CHEM200L - General Chemistry Lab	1
CHEM250 - Organic Chemistry I	3
CHEM260 - Analytical Chemistry	3
CHEM260L - Analytical Chemistry Lab	1
CHEM300 - Organic Chemistry II	3
CHEM300L - Organic Chemistry Lab	2
CHEM310 - Physical Chemistry I	3
CHEM310L - Physical Chemistry I Lab	1
CHEM360 - Physical Chemistry II	3
CHEM370 - Inorganic Chemistry I	3
CHEM370L - Inorganic Chemistry I Lab	1
MATH210 - Calculus II	3
MATH245 - Statistics for Health Sciences	3
MATH270 - Ordinary Differential Equations	3
PHYS250 - Thermodynamic and Waves	3
PHYS280 - Electricity and Magnetism	3
Major Requirements	24
CHEM350 - Organic Chemistry III	3
CHEM350L - Organic Chemistry Lab III Lab	1

CHEM400 - Inorganic Chemistry II	3
CHEM410 - Structure Determination of Compounds	3
CHEM420 - Industrial Chemistry	3
CHEM430 - Instrumental Chemistry	3
CHEM465 - Environmental Chemistry	3
CHEM480 - Senior Project in Chemistry	3
CHEM490 - Modern Topics in Chemistry	2
General Education Electives	6
GE**** General Education Electives	6
Major Elective	9
ME**** Major Elective	9

List of Major Electives - CHEM

Course Title	Cr
BIOC300 - Biochemistry I (General)	4
BMED450 - Clinical Chemistry	3
EDIT250 - Educational Technology for Teachers	3
FDSC370 - Food Chemistry	3
FDSC420 - Food Processing	3
MATH225 - Linear Algebra with Applications	3
MATH265 - Introduction to Linear Algebra	3
MATH330 - Partial Differential Equations	3
PHYS340 - Modern Physics	3

5.5.2 BIOC - BSc in Biochemistry (99 Credits)

About the program

The Bachelor of Science in biochemistry program strives to promote academic and personal excellence among its graduates by providing a high quality, rigorous biochemistry curriculum that prepares undergraduate students for various aspects of biochemistry disciplines where knowledge, critical and analytical thinking and oral communication skills are essential. The biochemistry curriculum ensures that the students possess personal and social skills to be mature, successful and effective members in their society.

Domain of work

Graduates of the B.S. in Biochemistry Program will have the required knowledge, skills and competence to pursue and progress in any of the following career options:

- Graduate school and research in biochemistry, molecular biology and biotechnology.
- Employment in the area of food science, agricultural research, and pharmaceutical industries.
- Technical lab assistants in university and clinical laboratory.
- Teaching biochemistry and molecular biology courses in high schools.

Program Educational Objectives (PEOs)

The main objectives of the BSc in Biochemistry Program are to:

1. Provide students with the basic concepts and knowledge in the biochemistry and techniques to enable them to understand the biochemistry pathways and processes in health, nutrition and life sciences.
2. Train students to use the different lab instruments, carry out and interpret laboratory work in biochemistry and acquire the necessary lab skills and safety practices.
3. Enroll students in academic and extracurricular activities that help them to acquire the necessary oral & social communication skills to ensure success in their future careers and social life.
4. Provide students with the necessary skills that enable students to apply their acquired theoretical & practical knowledge, analytical & problem-solving skills to design research, face challenges and develop solutions for emerging problems in their future careers and in the society.

Program Learning Outcomes (PLOs)

Upon completing of the B.S. in Biochemistry Program, graduates will be able to:

1. Demonstrate comprehensive knowledge and understanding of fundamental biochemical reactions and processes in living organisms.
2. Grasp aspects of the modern disciplines of biochemistry at the molecular, cellular and organism levels.
3. Practice various experimental techniques of biochemistry.
4. Illustrate the ability to critically evaluate and utilize scientific literature, to carry out experiments, analyze the obtained data and tie rational conclusions.
5. Reveal skills and expertise in biochemistry for various career opportunities.
6. Communicate scientific information clearly and precisely in oral and written formats.
7. Respect and appreciate the ethical and professional values and appreciate collaborative teamwork.
8. Show awareness of the duties and the responsibilities of a biochemist toward the society and the scientific community.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	46
BIOC300 - Biochemistry I (General)	4
BIOL200 - General Biology I	3
BIOL200L - General Biology I Lab	1
BIOL275 - Cell and Molecular Biology	3
BIOL275L - Cell and Molecular Biology Lab	1
BIOL360 - Human Physiology & Anatomy	4
BIOL360L - Human Physiology & Anatomy Lab	1
BIOL365 - Genetics	3
BIOL385 - Microbiology	3
BIOL385L - Microbiology Lab	1
BMED205 - Biophysics	3
CHEM200 - General Chemistry	3
CHEM200L - General Chemistry Lab	1
CHEM250 - Organic Chemistry I	3
CHEM260 - Analytical Chemistry	3
CHEM260L - Analytical Chemistry Lab	1
CHEM300 - Organic Chemistry II	3
CHEM300L - Organic Chemistry Lab	2
MATH245 - Statistics for Health Sciences	3
Major Requirements	26
BIOC350 - Biochemistry II (Intermediary)	3
BIOC350L - Biochemistry II Lab	1
BIOC375 - Enzymology	3
BIOC400 - Biochemistry III (Protein Structure & Function)	3

BIOC445 - Biotechnology	3
BIOC450 - Advanced Lab Techniques in Biochemistry	2
BIOC485 - Modern Topics in Biochemistry	3
BIOL490 - Seminar	1
BMED450 - Clinical Chemistry	3
BMED450L - Clinical Chemistry Lab	1
CHEM310 - Physical Chemistry I	3
General Education Electives	6
GE**** General Education Electives	6
Major Elective	6
ME**** Major Elective	6

List of Major Electives - BIOC

Course Title	Cr
BIOC390 - Bioinformatics	3
BIOC480 - Molecular Genetics	3
BIOC495 - Biochemistry Project	3
BIOL315 - Animal Behavior	3
BIOL415 - Endocrinology	3
BIOL425 - Immunology	3
BIOL485 - Neurobiology	3
BMED435 - Carcinogenesis and Oncology	3
CHEM465 - Environmental Chemistry	3
FDSC370 - Food Chemistry	3
FDSC435 - Food Toxicants and Additives	3
FDSC475 - Food Engineering	3
NUTR250 - Basic Nutrition	3

5.5.3 BIOL - BSc in Biology (99 Credits)

About the program

The Bachelor of Science in biology program strives to promote academic and personal excellence among its graduates by providing them with a high quality, rigorous curriculum that embraces the fundamental concepts of biology, necessary lab experiences, analytical, critical thinking and oral communication skills. The biology curriculum also ensures that the students possess personal and social skills to be mature, successful and effective members in their society.

Domain of work

Graduates of the B.S. in Biology Program will have the required knowledge, skills and competence to pursue and progress in any of the following career options:

- Graduate school and research in various biology-related fields.
- Employment in the area of food science, agricultural research, and pharmaceutical industries.
- Technical lab assistants in University labs.
- Teaching biology courses in high schools.

Program Educational Objectives (PEOs)

The main objectives of the B.S. in Biology Program are to:

1. Provide students with a comprehensive knowledge about the basic concepts of biology of organisms.
2. Train students to use the different lab instruments and acquire the necessary lab skills and safety practices.
3. Enroll students in academic and extracurricular activities that help them to acquire the necessary oral & social communication skills to ensure success in their future careers and social life.
4. Provide students with the necessary skills that enable them to use their knowledge in biology to answer biology-related questions & explain biological phenomena.
5. Equip students with knowledge and skills to assess and analyze data with objectivity and to be able to employ appropriate experimental design and methodology to solve problems in biology.

Program Learning Outcomes (PLOs)

Upon completing of the B.S. in Biology Program, graduates will be able to:

1. Demonstrate understanding of the core concepts of biology: Evolution, Cellular Structure & Function, Information Transfer & Gene Expression, Energy Transformation, Systems & organismal Biology
2. Effectively communicate underlying principles of biology.
3. Apply the scientific method through observation, experimentation and hypothesis testing.
4. Use quantitative reasoning in the analysis of dynamic biological systems.
5. Identify and practice the ethics related to scientific research.
6. Critically analyze the primary literature & experimental observations.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	42
BIOC300 - Biochemistry I (General)	4
BIOL200 - General Biology I	3
BIOL200L - General Biology I Lab	1
BIOL250 - General Biology II	3
BIOL250L - General Biology II Lab	1
BIOL275 - Cell and Molecular Biology	3
BIOL275L - Cell and Molecular Biology Lab	1
BIOL360 - Human Physiology & Anatomy	4
BIOL360L - Human Physiology & Anatomy Lab	1
BIOL365 - Genetics	3
BMED205 - Biophysics	3
CHEM200 - General Chemistry	3
CHEM200L - General Chemistry Lab	1
CHEM255 - Basic Organic Chemistry	3
CHEM255L - Basic Organic Chemistry Lab	1
CHEM260 - Analytical Chemistry	3
CHEM260L - Analytical Chemistry Lab	1
MATH245 - Statistics for Health Sciences	3
Major Requirements	30
BIOL315 - Animal Behavior	3
BIOL315L - Animal Behavior Project	1
BIOL335 - Ecology	3
BIOL335L - Ecology Lab	1

BIOL375 - Plant Physiology	3
BIOL375L - Plant Physiology Lab	1
BIOL385 - Microbiology	3
BIOL385L - Microbiology Lab	1
BIOL425 - Immunology	3
BIOL435 - Developmental Biology	3
BIOL435L - Developmental Biology Lab	1
BIOL450 - Modern Topics in Biology	3
BIOL485 - Neurobiology	3
BIOL490 - Seminar	1
General Education Electives	6
GE**** General Education Electives	6
Major Elective	6
ME**** Major Elective	6

List of Major Electives - BIOL

Course Title	Cr
BIOC445 - Biotechnology	3
BIOL310 - Virology	3
BIOL320 - Entomology	3
BIOL325 - Biology of Invertebrates	3
BIOL340 - Histology	3
BIOL355 - Biology Of Vertebrates	3
BIOL380 - Vascular Plants	3
BIOL415 - Endocrinology	3
BIOL465 - Biological Basis Of Behavior	3
BMED435 - Carcinogenesis and Oncology	3
FDSC435 - Food Toxicants and Additives	3
FDSC475 - Food Engineering	3
NUTR250 - Basic Nutrition	3

5.5.4 BMED - BSc in Biomedical Science (105 Credits)

About the program

The Bachelor of Science in Biomedical sciences are a set of medical, natural sciences and clinical sciences that is applied to interventions or technology used in healthcare, public health and in clinical laboratory diagnosis. Biomedical sciences combine academic and research activities and medical expertise and knowledge to fulfill the criteria of advancing biomedical laboratory techniques.

Domain of Work

The program provides the students with competencies needed for a career in Biomedical Sciences, and for further studies in Genetics, Clinical Chemistry, Toxicology, Molecular Diagnostics, Clinical Microbiology, Immunology, and Public Health. Job prospects for Biomedical Science graduate include:

Medical Technologist² in:

- Clinical Laboratories in Hospitals and Medical Centers
- Toxicology Laboratories
- Technologist in Research Laboratories, Government and Municipality laboratories
- Biomedical Specialist in companies manufacturing/marketing Biomedical supplies

Program Educational Objectives (PEOs)

Graduates of the BS in Biomedical Sciences Program will:

1. Interpret generated laboratory results and understand their relationship to diagnosis of disease.
2. Emphasize high principles of character, a sense of civic and moral responsibility, and commitment to basic values of human life.
3. Appreciate the need for research to develop knowledge of disease, health, healthcare management and education.

Program Learning Outcomes (PLOs)

Upon completing the B.S. in Biomedical Sciences Program, students will be able to:

1. Perform a full range of tests in the contemporary medical laboratory, encompassing pre-analytical, analytical, and post-analytical components of laboratory services, including hematology, chemistry, microbiology, urinalysis, body fluids, molecular diagnostics, phlebotomy, and immunohematology.
2. Think analytically and be able to solve wide range of problems, interpret results, and use statistical approaches when evaluating data.
3. Behave in a professional manner, respecting the feelings and needs of others, protecting the confidence of patient information, and not allowing personal concerns and biases to interfere with the welfare of patients.
4. Carry out administrative skills consistent with philosophies of quality assurance, continuous quality improvement, laboratory education, fiscal resource management, and appropriate composure under stressful conditions.
5. Apply safety and governmental regulations and standards as applicable in medical laboratory practice.
6. Acquire effective communication skills which ensure accurate and appropriate information transfer.

² After fulfilling requirements of respective licensing authorities.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	37
BIOL200 - General Biology I	3
BIOL200L - General Biology I Lab	1
BIOL275 - Cell and Molecular Biology	3
BIOL275L - Cell and Molecular Biology Lab	1
BIOL360 - Human Physiology & Anatomy	4
BIOL360L - Human Physiology & Anatomy Lab	1
BIOL365 - Genetics	3
BIOL385 - Microbiology	3
BIOL385L - Microbiology Lab	1
BIOL425 - Immunology	3
BMED205 - Biophysics	3
CHEM200 - General Chemistry	3
CHEM200L - General Chemistry Lab	1
CHEM255 - Basic Organic Chemistry	3
CHEM255L - Basic Organic Chemistry Lab	1
MATH245 - Statistics for Health Sciences	3
Major Requirements	43
BMED360 - Hematology	3
BMED360L - Hematology LAB	1
BMED370 - Parasitology	2
BMED370L - Parasitology Lab	1
BMED380 - Introduction to Quality Control and Accreditation	2
BMED390 - Medical Lab Management and Professional Ethics	1

BMED420 - Basic Life Support	1
BMED425 - Serology and Blood Banking	3
BMED425L - Serology and Blood Banking Lab	1
BMED430 - Medical Microbiology	3
BMED430L - Medical Microbiology Lab	1
BMED445 - Pathophysiology	3
BMED445L - Clinical Case Conference	1
BMED450 - Clinical Chemistry	3
BMED450L - Clinical Chemistry Lab	1
BMED460 - Histopathology	3
BMED470 - Clinical Mycology and Virology	2
BMED475 - Clinical Hematology and Hemostasis	2
BMED485 - Clinical Assessment and Techniques	3
MEDL399 - Medical Laboratory Internship I	3
MEDL499 - Medical Laboratory Internship II	3
General Education Electives	3
GE**** General Education Electives	3
Major Elective	7
BIOC310 - Medical Biochemistry	4
ME**** Major Elective	3

List of Major Electives - BMED

Course Title	Cr
BIOL415 - Endocrinology	3
BMED435 - Carcinogenesis and Oncology	3
BMED440 - criminology and forensic science	3
BMED465 - Modern Topics In Biomedical Sciences	3

5.5.5 FDST - BSc in Food Science Technology (99 Credits)

About the program

The Bachelor of Science in Food Science and Technology can be considered as the application of the basic sciences and engineering to study the fundamental physical, chemical, and biochemical nature of foods. In addition, students will be exposed to the principles of selection, preservation, processing, packaging, and distribution of food. Students take basic courses in chemistry, biology, and biochemistry, and then take other courses that are more specific to the field, such as food chemistry, food microbiology, food processing and engineering

Domain of Work

FDST is an undergraduate Food Technology major. Food Technology is the study of the application of food science to the selection, processing, packaging, distribution, and use of safe, nutritious, and wholesome food. Courses typically studied during this major are packaging technology, food microbiology, food chemistry, dairy/meat technology and food processing. Food technologists study the physical, microbiological, and chemical makeup of food. Depending on this area of specialization, Food Technologists may develop ways to process, preserve, package, or store food, according to industry and government specifications and regulations. The major is a career originating in nature and opens many job scopes after completion such as:

- Production operator
- Production supervisor
- Quality controller
- Food safety inspector
- Food lab technician
- Research and development officer
- Food ingredients and food additives salesman

Program Educational Objectives (PEOs)

The main objectives of the Bachelor of Science in Food Science and Technology Program are to:

1. Provide in-depth knowledge and practical skills regarding food preparation, entrepreneurship, food manufacturing, food product innovation, and food research projects.
2. Prepare graduates to be eligible to join successfully the food industry business sector and other related fields.
3. Strengthen students' capacities to be engaged in future food research projects and join graduate studies.
4. Promote Self-employment opportunities and leadership skills within the context of ethical values.

Program Learning Outcomes (PLOs)

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

1. Apply their knowledge in the development of food production sector.
2. Be able to use their capacities in leadership and working in diverse groups and environments.
3. Communicate information effectively with colleagues, supervisors, and the food industry in both written and oral forms.
4. Apply their knowledge in developing the industrial and traditional food production processes.
5. Act closely with governmental and private institutions to improve food quality and safety inspection procedures and rules.
6. Apply critical thinking and problem-solving skills to address current challenges in the food industry.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	37
BIOC300 - Biochemistry I (General)	4
BIOL200 - General Biology I	3
BIOL200L - General Biology I Lab	1
BIOL385 - Microbiology	3
BIOL385L - Microbiology Lab	1
BMGT200 - Introduction to Business Management	3
CHEM200 - General Chemistry	3
CHEM200L - General Chemistry Lab	1
CHEM255 - Basic Organic Chemistry	3
CHEM255L - Basic Organic Chemistry Lab	1
FDSC300L - Technology of Food Products Lab	1
FDSC355 - Food Microbiology II	3
FDSC355L - Food Microbiology II Lab	1
FDSC370 - Food Chemistry	3
MATH245 - Statistics for Health Sciences	3
NUTR250 - Basic Nutrition	3
Major Requirements	32
FDSC300 - Technology of Food Products	3
FDSC360 - Crop production attributes to quality	3
FDSC365 - Animal production attributes to quality	3
FDSC415 - Dairy Technology	3
FDSC420 - Food Processing	3
FDSC425L - Food Processing Lab	1
FDSC435 - Food Toxicants and Additives	3

FDSC445 - Food Quality management and HACCP	3
FDSC455 - Meat, Fish and Poultry Technology	3
FDSC460 - Food Service Management	3
FDSC475 - Food Engineering	3
FDSC498 - Supervised Training in Food Industries	1
General Education Electives	6
GE***** General Education Electives	6
Major Elective	9
ME***** Major Elective	9

List of Major Electives - FDST

Course Title	Cr
BECO210 - Introduction to Microeconomics	3
BHTM340 - Restaurant Management	3
BHTM375 - International Cuisine	3
BHTM425 - Food and Beverage Cost Control	3
BIOL250 - General Biology II	3
BMED205 - Biophysics	3
BMGT315 - Human Resource Management	3
BMKT300 - Marketing Theory and Principles	3
BMTH210 - Business and Managerial Math	3
CHEM260 - Analytical Chemistry	3
ENGG200 - Introduction to Engineering	3
FDSC480 - Tutorial in Food Science	3
FDSC495 - Project in Food Science	3
IENG300 - Engineering Project Management	3
IENG320 - Introduction to Environmental Engineering	3
MENG225 - Engineering Drawing & CAD	3

5.5.6 NUTR - BSc in Nutrition and Dietetics (99 Credits)

About the program

The department offers candidates a Bachelor of Science in Nutrition and Dietetics after completion of 99 credit hours of course study as outlined in the curriculum. In this program, students learn multidisciplinary courses in different areas of basic sciences, food sciences, and Nutrition and Dietetics. The program provides excellent theoretical and practical foundation for students interested in Dietetics profession.

Domain of Work

After successful fulfillment of the coursework, meeting internship requirements and passing the Lebanese Nutrition Colloquium, the graduates will be qualified to work as entry level dietetic professionals. Licensed graduates are capable of providing medical nutrition therapy and other nutrition related services at the level of individuals/community and can serve as an integral part of the health care teams. Graduates will work in settings such as in hospitals, private clinics, and long-term care facilities and at the level of community health institutions such as in nonprofit associations, public health clinics, and health maintenance organizations. Graduates can also work in implementation and auditing of food safety guidelines and in food product development and research. They can also work in food production facilities to help in production of innovative products and to produce food labels.

Program Educational Objectives (PEOs)

The main objectives of the Bachelor of Science in Nutrition and Dietetics Program are to:

1. Provide graduates with the knowledge, skills and competence necessary to work in different settings of their profession.
2. Prepare students to pursue further graduate studies in the field of nutrition, food science or other health related degrees in order to broaden their career opportunities.
3. Prepare graduates to be qualified licensed dietitians, after meeting the Lebanese government requirements for licensing.
4. Develop student abilities to be involved in defining and managing community nutritional related problems.
5. Gain ethical and cultural practices that allow them to handle clients of different cultural backgrounds.

Program Learning Outcomes (PLOs)

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

1. Become lifelong, avid learners and use updated evidence-based guidelines in their practices.
2. Be active healthcare members in the community, promoting sound nutrition and health lifestyle.
3. Use critical analysis skills to accomplish effective dietetic counseling and thorough follow up of patients in different settings related to disease prevention and control.
4. Utilize good communication skills to disseminate nutritional information about diet and nutrition and how to prevent or treat nutrition-related diseases.
5. Identify nutritional requirements of individuals and groups across life span and provide suitable dietary recommendations.
6. Learn major processing steps in food production along with information on food preservation and safety.
6. Define and apply the requirements of food safety and quality assurance programs and standards

Curriculum

Course Title	Cr
General Education Requirements	18
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
GE**** General Education Electives	3
Core Requirements	44
BIOC310 - Medical Biochemistry	4
BIOL200 - General Biology I	3
BIOL200L - General Biology I Lab	1
BIOL360 - Human Physiology & Anatomy	4
BIOL385 - Microbiology	3
BIOL385L - Microbiology Lab	1
BMED445 - Pathophysiology	3
BMGT200 - Introduction to Business Management	3
CHEM200 - General Chemistry	3
CHEM200L - General Chemistry Lab	1
CHEM255 - Basic Organic Chemistry	3
CHEM255L - Basic Organic Chemistry Lab	1
FDSC300 - Technology of Food Products	3
FDSC300L - Technology of Food Products Lab	1
FDSC420 - Food Processing	3
FDSC425L - Food Processing Lab	1
FDSC460 - Food Service Management	3
MATH245 - Statistics for Health Sciences	3
Major Requirements	31
NUTR250 - Basic Nutrition	3

NUTR315 - Human Nutrition and Metabolism	4
NUTR351 - Nutritional Assessment and Counseling	4
NUTR400 - Nutrition Through Life Span	3
NUTR411 - Therapeutic Nutrition	4
NUTR440 - Obesity & Regulation of Body Weight	3
NUTR450 - Community Nutrition	3
NUTR475 - Inborn Errors of Metabolism	3
NUTR485 - Selected Topics in Clinical Nutrition	3
NUTR490 - Nutrition Seminar	1
Major Elective	6
ME**** Major Elective	6

List of Major Electives - NUTR

Course Title	Cr
BMED450 - Clinical Chemistry	3
FDSC370 - Food Chemistry	3
FDSC415 - Dairy Technology	3
FDSC435 - Food Toxicants and Additives	3
FDSC445 - Food Quality management and HACCP	3
FDSC475 - Food Engineering	3
FDSC480 - Tutorial in Food Science	3
NUTR460 - Sport Nutrition	3
NUTR465 - Pediatric Nutrition	3
NUTR495 - Counseling Strategies in Dietetic Practice	3

5.5.7 CSCI - BSc in Computer Science (100 Credits)

About the program

The Bachelor of Science in Computer Science has become the backbone of our modern society affecting the overwhelming majority of all businesses, schools, organizations and government agencies. The Computer Science program is designed to prepare students for employment and for advanced study in Computer Science. It provides a solid foundation of theoretical knowledge, application development and hardware as well as experience with practical applications. The program has three tracks options:

1. Computer Science
2. Cyber Security
3. Artificial Intelligence and Data Science

Domain of Work

Students will have a range of opportunities open to them as a Computer Science graduate. Jobs directly related to the degree include:

- Computer and Information Research Scientists
- Computer and Information Systems Manager
- Computer Systems Analyst, Data Analyst
- Game developer, Mobile App developer
- Software Developer, Software Engineers and Web Developer.

Program Educational Objectives (PEOs)

A few years after graduation, graduates of the B.S. in Computer Science will:

1. Have successful careers in the public and private sectors in the computer science field and other related fields.
2. Pursue further studies and conduct research at graduate levels.
3. Identify, design and implement of appropriate software solutions to problems within the limits of professional ethics and responsible behavior.
4. Pursue professional development and apply technological changes in a range of relevant context.

Program Learning Outcomes (PLOs)

Graduates of the BSc in Computer Science will have the ability to:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply Computer Science theory and software development fundamentals to produce computing-based solutions.
7. Apply security principles and practices to maintain operations in the presence of risks and threats.
8. Support the delivery, use, and management of information systems within an information systems environment.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	36
CSCI205 - Computer Science Overview	3
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1
CSCI300 - Intermediate Programming with Objects	3
CSCI300L - Intermediate Programming with Objects Lab	1
CSCI335 - Database Systems	3
CSCI342 - Fundamentals of Networking Technologies	3
CSCI345 - Digital Logic	3
CSCI390 - Web Programming	3
ENVR200 - Environmental Science	3
ENVR200L - Environmental Science Lab	1
MATH210 - Calculus II	3
MATH225 - Linear Algebra with Applications	3
MATH260 - Discrete Mathematics	3
Major Requirements	34
CSCI351 - Concepts of Programming Languages	3
CSCI378 - Data Structures and Algorithms	3
CSCI380 - Software Engineering	3
CSCI392 - Computer Networks	3
CSCI430 - Operating Systems	3

CSCI430L - Operating Systems Lab	1
CSCI435 - Computer Architecture	3
CSCI450 - Theory of Computation	3
CSCI451 - Parallel Processing	3
CSCI490 - Information System Development	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
MATH375 - Numerical Methods for Scientists & Engineers	3
General Education Electives	3
GE**** General Education Electives	3
Major Elective	12
ME**** Major Elective	12

List of Major Electives - CSCI

Course Title	Cr
CSCI362 - Network Security	3
CSCI372 - Natural Language Processing	3
CSCI373 - Robotics Design & Coding	3
CSCI410 - Mobile Application	3
CSCI412 - Application Software Security	3
CSCI426 - Web Programming Advanced	3
CSCI441 - Machine Learning	3
CSCI443 - Game Development	3
CSCI471 - Deep Learning	3
CSCI475 - Artificial Intelligence	3
CSIT430 - Internetworking and Routing Protocols	3
CSIT480 - Interconnecting Networks	3

5.5.8 CSIT - BSc in Information Technology (100 Credits)

About the program

The Bachelor of Science in Information Technology program is designed to prepare students for employment and advanced study in Information Technology. It is primarily focused on subjects such as troubleshooting computers, administering databases, securing networking, study management and information science. Students will be able to perform technical tasks relating to the processing, storing, and communication of information between computers. The student course of study will provide experience with practical applications in hardware and software such as network management, network security, database management, and microcomputer support.

Domain of Work

Students will have a range of opportunities open to them as an Information Technology graduate. Jobs directly related to the degree include: Computer and Information Systems Manager, Computer Hardware Engineer, Computer Network Architect, Computer Support Specialists, Database Administrator, Information Security Analysts, Network Systems Administrators Computer Systems Administrators, IT Consultant, IT Trainer, and IT Sales Professional.

Program Educational Objectives (PEOs)

A few years after graduation, graduates of the B.S. in Information Technology will:

1. Have successful careers as I.T. specialist in public and private sectors at various levels.
2. Pursue further studies at graduate levels in IT or communication-related fields.
3. Identify, design and implement appropriate software solutions to problems within the limits of professional ethics and responsible behavior.
4. Respond to technological changes through the development of knowledge and skills.

Program Learning Outcomes (PLOs)

Graduates of the BSc in Information Technology will have the ability to:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing-based systems.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	29
BMGT200 - Introduction to Business Management	3
BSTA205 - Introduction to Business Statistics	3
CSCI205 - Computer Science Overview	3
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1
CSCI300 - Intermediate Programming with Objects	3
CSCI300L - Intermediate Programming with Objects Lab	1
CSCI335 - Database Systems	3
CSCI342 - Fundamentals of Networking Technologies	3
MATH210 - Calculus II	3
MATH225 - Linear Algebra with Applications	3
Major Requirements	44
BMIS300 - Management Information Systems	3
BMIS360 - Operations Management	3
CSCI362 - Network Security	3
CSCI390 - Web Programming	3
CSCI392 - Computer Networks	3
CSCI426 - Web Programming Advanced	3
CSCI430 - Operating Systems	3
CSCI430L - Operating Systems Lab	1
CSCI490 - Information System Development	3
CSIT381 - Microcomputer Support	3
CSIT415 - System and Network Administration	3

CSIT430 - Internetworking and Routing Protocols	3
CSIT480 - Interconnecting Networks	3
CSIT481 - System Architecture & Integration	3
CSIT482 - Human-Computer Interaction	3
CSIT491 - Internship	1
General Education Electives	3
GE**** General Education Electives	3
Major Elective	9
ME**** Major Elective	9

List of Major Electives - CSIT

Course Title	Cr
CSCI351 - Concepts of Programming Languages	3
CSCI361 - Introduction to Cryptography	3
CSCI371 - Knowledge Representation & Reasoning	3
CSCI372 - Natural Language Processing	3
CSCI373 - Robotics Design & Coding	3
CSCI378 - Data Structures and Algorithms	3
CSCI380 - Software Engineering	3
CSCI410 - Mobile Application	3
CSCI412 - Application Software Security	3
CSCI441 - Machine Learning	3
CSCI443 - Game Development	3
CSCI450 - Theory of Computation	3
CSCI451 - Parallel Processing	3
CSCI471 - Deep Learning	3
CSCI475 - Artificial Intelligence	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
MATH375 - Numerical Methods for Scientists & Engineers	3

5.5.9 MATH - BSc in Mathematics (99 Credits)

About the program

The Bachelor of Science in Mathematics program is designed to offer students a quality education in mathematics, to expose them to a significant range of mathematical disciplines and to build up their reasoning, critical thinking, analytical and technological skills. The program aims to train students in dealing with abstraction, in enhancing their sense of formalism, in tackling mathematical problems, and in writing clear and rigorous proofs.

Domain of Work

The program prepares students for a wide range of careers such as teaching at the high school level, and careers that require analytical ability. It also prepares students to pursue graduate studies in Mathematics or other related fields.

Program Educational Objectives (PEOs)

The main objectives of the Bachelor of Science in Mathematics are:

1. To build a foundation of basic knowledge in mathematics that prepare students for successful professional careers in mathematics or other related areas.
2. To equip students with skills relevant to the practice of mathematics, among which are independent and critical thinking and problem-solving techniques.
3. To develop research skills and be aware of the variety problems related to the field of study, which prepare students for higher education in Mathematics.
4. To enhance professional thinking and promote collaborative work among students to help them function effectively and ethically in a professional workplace or in a graduate program

Program Learning Outcomes (PLOs)

Graduates of the BSc in Mathematics will have the ability to:

1. Show proficiency in basic knowledge in a wide range of mathematical areas.
2. Understand the different mathematical concepts and be able to use mathematical tools to solve larger real-world problems.
3. Identify the inter-dependency of different areas of mathematics, as well as connections between mathematics and other disciplines.
4. Read, understand and write mathematical proofs.
5. Explain and communicate mathematical concepts and ideas effectively in graphical, oral, and written media.

Curriculum

Course Title	Cr
Core Requirements	50
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1
MATH210 - Calculus II	3
MATH220 - Calculus III	3
MATH225 - Linear Algebra with Applications	3
MATH260 - Discrete Mathematics	3
MATH260L - Discrete Mathematics Lab	1
MATH270 - Ordinary Differential Equations	3
MATH305 - Programming Languages for Scientist	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
MATH330 - Partial Differential Equations	3
MATH345 - Introduction to Real Analysis	3
MATH375 - Numerical Methods for Scientists & Engineers	3
MATH380 - Complex Variables	3
PHYS210 - Mechanics	3
PHYS250 - Thermodynamic and Waves	3
PHYS280 - Electricity and Magnetism	3
PHYS360 - Analytical Mechanics	3
Major Requirements	37
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
MATH315 - Advanced Linear Algebra	3
MATH365 - Abstract Algebra	3
MATH385 - Introduction to Topology	3
MATH405 - Number Theory	3
MATH420 - Differential Geometry	3

MATH455 - Mathematical Analysis	3
MATH490 - Modern Topics in Algebra	3
MATH492 - Mathematical Seminar	1
General Education Electives	6
GE***** General Education Electives	6
Major Elective	6
ME***** Major Elective	6

List of Major Electives - MATH

Course Title	Cr
BMGT200 - Introduction to Business Management	3
EDIT250 - Educational Technology for Teachers	3
EENG250 - Electric Circuits I	3
MATH400 - Special Functions	3
MATH460 - Functional Analysis	3
MATH465 - Selected Topics in Undergraduate Mathematics	3
MATH475 - Computational Mathematics	3
MATH495 - Mathematics Senior Project	3
MENG250 - Statics	3
MENG370 - Fluid Mechanics I	3
PHYS330 - Electromagnetic Fields and Waves I	3
PHYS340 - Modern Physics	3
PHYS350 - Physical Optics	3
PHYS370 - Nuclear Physics	3
PHYS390 - Astronomy	3
PHYS420 - Quantum Mechanics	3
PHYS430 - Thermal Physics I	3

5.5.10 PHYS - BSc in Physics (99 Credits)

About the program

In physics, one attempts to discover, formulate, explain, and apply the basic laws of nature. Principles of physics provide the foundation for other science as well as engineering. Some of the examples of modern technological developments from the application of physical principles include radio and television, computers, laser scanners, and communication by fiber optics. In addition, physicists explore problems in astronomy and theories for the origin and evolution of the universe.

The program is designed to give students an understanding of the fundamentals of physics including concepts of atomic and nuclear physics, classical mechanics, wave motion and sound, electromagnetism and optics, heat and thermodynamics, relativity, quantum mechanics and elementary particles and their interaction.

Domain of Work

The program prepares students for various possible careers in teaching, research, and other areas of technology. Holders of a Physics BS can:

1. Teach in high schools and technical institutes.
2. Work as lab technician.
3. Pursue graduate studies in fundamental and applied physics.
4. Pursue a professional education that prepares them for careers in Medical Physics, Geophysics and meteorology, Space and Astronomy, Intellectual property law, Optometry, etc.
5. Work as data or financial analyst.

Program Educational Objectives (PEOs)

The main objectives of the Bachelor of Science in Physics Program are:

1. To build a foundation of basic knowledge in Physics that prepare students for successful professional careers in Physics or other related areas.
2. To develop analytical and reasoning skills that promote the students' ability to understand and solve wide range of physics problems.
3. To develop research, computational, and experimental skills which prepare students for higher education in Physics.
4. To enhance professional and ethical attributes and promote team working skills to help students function professionally in a workplace or in a graduate program.

Program Learning Outcomes (PLOs)

After completion of the B.S. in Physics Program, students will be able to demonstrate:

1. An understanding of the basic physics knowledge in the core courses such as classical mechanics, electromagnetic theory, thermal and statistical physics, quantum physics, optics, and solid-state physics.
2. Critical thinking and an ability to analyze and solve problems analytically.
3. A proficiency in the use of technology to do scientific computations, write scientific reports and do oral presentations.
4. An ability to communicate physics ideas with various audiences.
5. An ability to perform experiments, collect data, analyze and report them.
6. An ability to identify the inter-dependency of different areas of physics, as well as their connections with other disciplines

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	39
CHEM200 - General Chemistry	3
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1
MATH210 - Calculus II	3
MATH220 - Calculus III	3
MATH225 - Linear Algebra with Applications	3
MATH270 - Ordinary Differential Equations	3
MATH305 - Programming Languages for Scientist	3
MATH375 - Numerical Methods for Scientists & Engineers	3
PHYS210 - Mechanics	3
PHYS250 - Thermodynamic and Waves	3
PHYS250L - Thermodynamic and Waves Lab	1
PHYS280 - Electricity and Magnetism	3
PHYS280L - Electricity and Magnetism Lab	1
PHYS330 - Electromagnetic Fields and Waves I	3
Major Requirements	33
PHYS300 - Mathematical Physics	3
PHYS340 - Modern Physics	3
PHYS340L - Atomic Physics Lab	1
PHYS350 - Physical Optics	3
PHYS350L - Physical Optics Lab	1

PHYS360 - Analytical Mechanics	3
PHYS380 - Electromagnetic Fields and Waves II	3
PHYS420 - Quantum Mechanics	3
PHYS430 - Thermal Physics I	3
PHYS450 - Solid State Physics	3
PHYS470 - Advanced Quantum Mechanics	3
PHYS480 - Thermal Physics II	3
PHYS490 - Physics Seminar	1
General Education Electives	6
GE**** General Education Electives	6
Major Elective	6
ME***** Major Elective	6

List of Major Electives - PHYS

Course Title	Cr
EDIT250 - Educational Technology for Teachers	3
EENG250 - Electric Circuits I	3
MATH260 - Discrete Mathematics	3
MATH310 - Probability & Statistics for Scientists & Engineers	3
MATH330 - Partial Differential Equations	3
PHYS370 - Nuclear Physics	3
PHYS390 - Astronomy	3
PHYS465 - Selected Topics in Undergraduate Physics	3

5.6 Program of Study – Undergraduate programs (Arts Majors)

5.6.1 GDES - BA in Graphic Design (99 Credits)

About the program

The Bachelor of Arts in Graphic Design program is designed to offer students the opportunity to become creative graphic designers by providing them with the best academic experiences. The Fine Arts and Design department provides the best expertise in teaching and learning, with continuous updates in Graphic software and technological skills and innovation in the processes of creativity needed for students to succeed as individuals and as contributors in the betterment of their own lives and the surrounding communities, a generation of innovative and human-centered designers capable of producing visual communicative messages that are functional, creative and ethical.

Domain of Work

Graphic Design graduates are prepared to work in branding, illustration, packaging, character design, photography, publishing, animation, web, teaching and more. Some open their own design studios, or work in branding agencies or pursue their Masters in Visual Communication.

Program Educational Objectives (PEOs)

The main objectives of the Bachelor of Arts in Graphic Design Program are to:

1. Prepare students to think, to plan, and to execute their ideas with proper skills and technology to succeed in the workplace.
2. Provide students with a solid theoretical and applicable knowledge to pursue graduate studies and commit to professional development and life-long learning.
3. Prepare students to be ethical designers and social individuals who accept diversity and embrace multiplicity.

Program Learning Outcomes (PLOs)

Upon successful completion of the BA program in Graphic Design, graduates will have the ability to:

1. Display capabilities in formulating meaningful visual messages that can communicate with a specific target group.
2. Display competency in software and technical skills pertinent to graphic design.
3. Acquire and articulate graphic design lexicon and terminologies used to communicate with other designers or coworkers from other fields of expertise.
4. Apply methodological technics of design and design-thinking strategies to produce marketing and communication messages for companies, services and products.
5. Acquire and articulate conceptual thinking methodologies and prove the ability to scrutinize, synthesize, and construct successful solutions.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	45
ARTS200 - Foundation Drawing I	3
ARTS210 - Color Theory - Painting	3
ARTS215 - History of Arts	3
ARTS250 - Foundation Drawing II	3
ARTS260 - Design Fundamentals - 2D	3
ARTS270 - Design Fundamentals - 3D	3
ARTS320 - Rendering and Perspective Techniques	3
ARTS350 - Photography	3
COMM285 - Theories of Perception	3
COMM325 - Animation Software	3
GDES270 - Design Software I	3
GDES300 - Typography I	3
GDES315 - History of Graphic Design	3
GDES350 - Typography II & Art of Calligraphy	3
GDES365 - Illustration II - Story Board	3
Major Requirements	30
GDES345 - Graphic Design Studio I	4
GDES370 - Graphic Design Software II	3
GDES394 - Graphic Design Studio II	4

GDES420 - Web Page Design	3
GDES440 - Packaging	3
GDES445 - Graphic Design Studio III	4
GDES450 - Advanced Animation	3
GDES480 - Professional Practice	2
GDES495 - Graphic Design Senior Project	4
General Education Electives	6
GE**** General Education Electives	6
Major Elective	3
ME**** Major Elective	3

List of Major Electives - GDES

Course Title	Cr
ARTS300 - Painting	3
COMM220 - Rhetoric & Persuasion	3
COMM225 - Workshop	3
COMM255 - Theories of Mass Media	3
COMM265 - Performance Theory & Practice	3
GDES355 - Sketching for Graphic Design	3
GDES395 - Character Design	3
GDES415 - Creative Advertising	3

5.6.2 IDES - BA in Interior Design (99 Credits)

About the program

The Bachelor of Arts Interior Design program is designed to offer students the opportunity to become creative Interior designers by providing them with the best academic experiences. The Fine Arts and Design department provides the best expertise in teaching and learning, with continuous updates in Interior and architecture software and technological skills and innovation in the processes of creativity needed for students to succeed as individuals and as contributors in the betterment of their own lives and the surrounding communities, a generation of innovative and human-centered designers capable of creating private and public interiors that are functional, safe and healthy.

Domain of Work

Interior Design graduates are prepared to work in residential interiors or commercial or in large firms or small studios and more. Some open their own design studios, teach, design furniture, become sustainability specialists or pursue their Masters in Interior Design.

Program Educational Objectives (PEOs)

The main objectives of the program of the Bachelor of Arts in Interior Design are to:

1. Prepare students to think, to plan, and to execute their ideas with proper skills and technology to succeed in the workplace.
2. Provide students with a solid theoretical and applicable knowledge to pursue graduate studies and commit to professional development and life-long learning.
3. Prepare students to various working platforms and diverse environments through personal communication skills.
4. Prepare students to become effective visual creators, ethical and social problem solvers.
5. Provide students with the conventional design tools, basic standards and materials research for a sustainable and environmentally friendly interior spaces.

Program Learning Outcomes (PLOs)

Upon successful completion of the BA program in Interior Design, graduates will have the ability to:

1. Display competency in software and technical skills pertinent to interior design drafting and rendering.
2. Implement and produce interior spaces designed from specified themes and valid concepts.
3. Acquire and articulate conceptual thinking methodologies and prove the ability to scrutinize, synthesize, and construct successful solutions.
4. Demonstrate awareness and involvement in the sociopolitical, cultural and ethical issues.
5. Understand the relationship of Interior Design to other adjacent fields of specialization like Architecture, Engineering and Construction.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	27
ARTS200 - Foundation Drawing I	3
ARTS210 - Color Theory - Painting	3
ARTS215 - History of Arts	3
ARTS250 - Foundation Drawing II	3
ARTS260 - Design Fundamentals - 2D	3
ARTS270 - Design Fundamentals - 3D	3
ARTS320 - Rendering and Perspective Techniques	3
ARTS350 - Photography	3
COMM285 - Theories of Perception	3

Major Requirements	48
GDES480 - Professional Practice	2
IDES300 - Architectural Drawing	3
IDES310 - Materials - Techniques and Building Codes	3
IDES315 - History of Architecture	3
IDES330 - CAD I	3
IDES345 - Interior Design Studio I	4
IDES360 - Lighting and HVAC	3
IDES370 - Furniture History and Design	3
IDES380 - CAD II	3
IDES394 - Interior Design Studio II	4
IDES400 - Architectural Modeling	3
IDES420 - Landscape Design	3
IDES430 - Computer Rendering for Interior Design	3
IDES445 - Interior Design Studio III	4
IDES495 - Interior Design Senior Project	4
General Education Electives	6

GE**** General Education Electives	6
Major Elective	3
ME**** Major Elective	3

List of Major Electives - IDES

Course Title	Cr
ARTS300 - Painting	3
COMM205 - Introduction to Western Civilization	3

COMM220 - Rhetoric & Persuasion	3
COMM225 - Workshop	3
COMM255 - Theories of Mass Media	3
COMM265 - Performance Theory & Practice	3
GDES270 - Design Software I	3
IDES320 - Placemaking	3
IDES355 - Sketching for Interior Design	3
IDES395 - Autodesk Maya & Adobe Photoshop	3
IDES410 - History of Architects	3

5.6.3 ADVR - BA in Communication Arts / Advertising (108 Credits)

About the program

The Department of Communication Arts encourages embracing new methods, changes, promoting inspiration, innovation, and critical thinking. The Bachelor of Arts in Advertising is a competitive, creative, challenging and exciting industry, serving major businesses at the intersection of media and society.

Domain of Work

Graduates of B.A. in Communication Arts, Advertising Program acquire a solid background for one of the below career options:

- Advertising graduates work as copywriters, graphic designers, web managers, marketing managers, media buyers, account executives and product managers in advertising agencies.
- Employment in the advertising departments of a variety of corporations and nonprofit organizations.
- Careers in Media and marketing organizations as advertising sales representative, promotions and brand manager.

Program Educational Objectives (PEOs)

The main objectives of the B.A. in Communication Arts, Advertising Program are to:

1. Equip graduates with theoretical and practical knowledge that prepares them for successful careers as advertising and marketing professionals.
2. Develop graduates research skills that prepare them for graduate studies in advertising and marketing.
3. Provide graduates with knowledge, skills and competencies in strategic planning, copywriting, art direction, media buying and planning, sales, management, teamwork, pitching, and leadership.
4. Prepare graduates to act ethically and professionally in the work field.

Program Learning Outcomes (PLOs)

Upon successful completion of the B.A. in Communication Arts, Advertising Program, graduates will have the ability to:

1. Develop full advertising campaigns that meet client needs and market requirements.
2. Describe, analyze and measure the relevant theories, digital ads, legal issues, ethical challenges and diversity in the fields of advertising.
3. Understand and apply the principles and the concepts of the advertising field within the local, international and global markets.
4. Develop advertising media buying and planning strategies.
5. Design effective visual communication for various advertising approaches that combine the use of print, online digital and other multimedia communication.
6. Positively contribute to the Advertising and the Marketing industries through fostering the ability of critical thinking.

Curriculum

Course Title	Cr
Core Requirements	45
ADVR300 - Advertising Theory & Practice	3
ARTS350 - Photography	3
COMM200 - Introduction to Communication Studies	3
COMM205 - Introduction to Western Civilization	3
COMM220 - Rhetoric & Persuasion	3
COMM225 - Workshop	3
COMM265 - Performance Theory & Practice	3
COMM285 - Theories of Perception	3
COMM300 - Media Laws & Ethics	3
COMM310 - Research Methods in Communication Arts	3
COMM320 - Radio-TV Announcing	3
COMM330 - Media Planning & Audience Analysis	3
COMM400 - Media Management	3
GDES270 - Design Software I	3
PREL300 - Public Relations Principles & Concepts	3
Major Requirements	30
ADVR348 - Advertising Pitching	3
ADVR350 - Advertising Copywriting	3

ADVR370 - Psychology of Advertising	3
ADVR390 - Branding and Corporate Identity	3
ADVR410 - Advertising & Sales Promotion	3
ADVR420 - New Media in advertising	3
ADVR430 - Advertising Storyboard	3
ADVR460 - Advertising Creativity	3
ADVR485 - Advertising Campaign Design	3
ADVR495 - Senior Study in Advertising	3
General Education Electives	33
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
ME**** Major Elective	12
GE**** General Education Electives	6

List of Major Electives - ADVR

Course Title	Cr
ADVR470 - Advertising Workshop	3
ARTS200 - Foundation Drawing I	3
ARTS210 - Color Theory - Painting	3
ARTS250 - Foundation Drawing II	3
ARTS260 - Design Fundamentals - 2D	3
ARTS270 - Design Fundamentals - 3D	3
ARTS320 - Rendering and Perspective Techniques	3
ARTS330 - History of Modern Art	3
BMKT300 - Marketing Theory and Principles	3
COMM325 - Animation Software	3
JORN200 - News Writing & Reporting	3
JORN285 - Travel Journalism	3
JORN370 - Arabic News Writing & Reporting	3
JORN375 - Journalism Workshop	3
JORN380 - Web Journalism	3
JORN385 - Citizen Journalism	3
JORN400 - Newspaper & Magazine Writing & Production	3
JORN440 - Reporting of Public Affairs	3
PREL360 - Public Relations Practice & Analysis	3
PREL375 - Specialized Writing in Public Relations	3

PREL380 - Communication Tools in Public Relations	3
PREL390 - Public Relations & Advertising	3
PREL415 - Public Relations and Marketing	3
PREL430 - Public Relations Campaign	3
PREL445 - Critical Inquiry & Public Relations	3
RATV230 - Radio-TV Workshop II	3
RATV315 - Television Production	3
RATV316 - Mobile Media	3
RATV370 - Writing for Radio and TV	3
RATV425 - TV Directing	3
RATV430 - Radio Production	3
RATV435 - Radio-TV News	3
RTVF330 - Fundamentals of Makeup Artistry	3
RTVF340 - Script Writing	3
RTVF400 - Talk Show	3
RTVF410 - Art of Film	3
RTVF425 - Documentary Making	3
RTVF440 - Music Production	3
RTVF493 - Video Pre Production	3
RTVF494 - Video Production and Post Production	3

5.6.4 JOUR - BA in Communication Arts / Journalism (108 Credits)

About the program

The Department of Communication Arts encourages embracing new ideas, methods, changes, promoting inspiration, innovation, and critical thinking. This requires a broad educational background coupled with rigorous professional training. The curriculum emphasizes on effective writing since it is center to communication and is integral to the program.

Domain of Work

Graduates of the B.A. in Communication Arts, Journalism Program acquire a solid background for one of the below career options:

- Careers in print journalism, broadcast, and multimedia news, writing for business or non-profits
- News reporter and Screen writer.
- Press information bureau.

Program Educational Objectives (PEOs)

The objective of the B.A. in Communication Arts, Journalism Program is to have graduates that will:

1. Balance between practical, theoretical and conceptual aspects of media professions.
2. Act ethically and professionally to serve the society while respecting the principles of media laws, and during decision-making.
3. Pursue graduate studies in journalism, multimedia research, or related fields.
4. Encourage a culture of collaboration in the working environment through team reporting.
5. Act ethically and professionally in the work field.

Program Learning Outcomes (PLOs)

Upon completion of the B.A. in Communication Arts, Journalism Program, students will have the ability to:

1. Apply the laws of free speech within the trends of current media.
2. Write a variety of mass media products; including press releases, reports, and other journalistic work in an accurate and a meaningful language.
3. Present the news stories in a clear and concise fashion using a variety of precise words, images and sound.
4. Create and design emerging media products, including social media and multimedia (blogs, digital audio, and videos).
5. Develop a multi-tasking skill required in the dynamic multimedia environment.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	51
ADVR300 - Advertising Theory & Practice	3
ARTS350 - Photography	3
COMM200 - Introduction to Communication Studies	3
COMM205 - Introduction to Western Civilization	3
COMM220 - Rhetoric & Persuasion	3
COMM225 - Workshop	3
COMM265 - Performance Theory & Practice	3
COMM285 - Theories of Perception	3
COMM300 - Media Laws & Ethics	3
COMM310 - Research Methods in Communication Arts	3
COMM320 - Radio-TV Announcing	3
COMM330 - Media Planning & Audience Analysis	3

COMM400 - Media Management	3
GDES270 - Design Software I	3
JORN410 - News Production	3
PREL300 - Public Relations Principles & Concepts	3
RTVF425 - Documentary Making	3
Major Requirements	30
JORN200 - News Writing & Reporting	3
JORN370 - Arabic News Writing & Reporting	3
JORN375 - Journalism Workshop	3
JORN380 - Web Journalism	3
JORN385 - Citizen Journalism	3
JORN440 - Reporting of Public Affairs	3
JORN450 - Investigative Journalism	3
JORN495 - Senior Study in Journalism	3
RATV370 - Writing for Radio and TV	3
RATV435 - Radio-TV News	3
General Education Electives	6
GE**** General Education Electives	6
Major Elective	6
ME**** Major Elective	6

List of Major Electives - JOUR

Course Title	Cr
ADVR348 - Advertising Pitching	3
ADVR350 - Advertising Copywriting	3
ADVR370 - Psychology of Advertising	3
ADVR390 - Branding and Corporate Identity	3
ADVR400 - Global Advertising	3
ADVR410 - Advertising & Sales Promotion	3
ADVR460 - Advertising Creativity	3
ADVR470 - Advertising Workshop	3
ADVR485 - Advertising Campaign Design	3
ARTS200 - Foundation Drawing I	3
ARTS210 - Color Theory - Painting	3
ARTS250 - Foundation Drawing II	3
ARTS260 - Design Fundamentals - 2D	3
ARTS270 - Design Fundamentals - 3D	3
ARTS320 - Rendering and Perspective Techniques	3
ARTS330 - History of Modern Art	3
BMKT300 - Marketing Theory and Principles	3
COMM325 - Animation Software	3
JORN285 - Travel Journalism	3

PREL360 - Public Relations Practice & Analysis	3
PREL375 - Specialized Writing in Public Relations	3
PREL380 - Communication Tools in Public Relations	3
PREL390 - Public Relations & Advertising	3
PREL415 - Public Relations and Marketing	3
PREL430 - Public Relations Campaign	3
PREL445 - Critical Inquiry & Public Relations	3
PREL450 - Public Relations Workshop	3
PREL455 - Public Speaking	3
RATV230 - Radio-TV Workshop II	3
RATV315 - Television Production	3
RATV316 - Mobile Media	3
RATV425 - TV Directing	3
RATV430 - Radio Production	3
RTVF330 - Fundamentals of Makeup Artistry	3
RTVF400 - Talk Show	3
RTVF410 - Art of Film	3
RTVF440 - Music Production	3
RTVF494 - Video Production and Post Production	3

5.6.5 RTVF - BA in Communication Arts / Radio and Television (108 Credits)

About the program

The Department of Communication Arts encourages embracing new ideas, methods, changes, promoting inspiration, innovation, and critical thinking. This program integrates theory and practice into all areas of study. Students will produce, evaluate, and manage media content for traditional and emerging media in a variety of genres, including information (news and documentary), commercial and noncommercial campaigns.

Domain of Work

The program prepares students for various possible careers in teaching, research, and other areas of technology. Holders of a RTVF BA can work in one of the below career options:

- Teach in technical institutes.
- Work in the various production, creative, and managerial professions in the TV and film industries.
- Produce and direct TV shows and short films as well as experience the various production roles and tasks.
- Pursue careers as writers, producers, directors, sound designers, and directors of photography.

Program Educational Objectives (PEOs)

The objective of the B.A. in Communication Arts, Radio and Television Program is to have graduates that will:

1. Apply theoretical, historical, conceptual, critical thinking and tools of communication through radio and television.
2. Employ creative talents and innovative skills in the field of communication arts.
3. Communicate effectively and act ethically as media professionals to serve the community.
4. Develop research abilities that allow students to pursue graduate studies in radio, television, and film research.
5. Act ethically and professionally in the work field.

Program Learning Outcomes (PLOs)

Upon completion of the B.A. in Communication Arts, Radio and Television, students will have the ability to:

1. Understand the rhetorical power of story-telling to inform, to persuade, and to entertain.
2. Recognize the power of visual images and the ethical responsibility of filmmakers.
3. Identify the primary functions of scriptwriting and be able to create a documentary or short video production.
4. Acquire fundamental knowledge in directing editing, lighting and sound, and digital camera operations and shooting/composition aesthetics.
5. Create quality audio and video work using current and evolving technologies through written, oral, and visual communication skills.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	51
ADVR300 - Advertising Theory & Practice	3
ARTS350 - Photography	3
COMM200 - Introduction to Communication Studies	3
COMM205 - Introduction to Western Civilization	3
COMM220 - Rhetoric & Persuasion	3
COMM225 - Workshop	3
COMM265 - Performance Theory & Practice	3
COMM285 - Theories of Perception	3
COMM300 - Media Laws & Ethics	3
COMM310 - Research Methods in Communication Arts	3
COMM320 - Radio-TV Announcing	3
COMM330 - Media Planning & Audience Analysis	3

COMM400 - Media Management	3
GDES270 - Design Software I	3
PREL300 - Public Relations Principles & Concepts	3
RTVF340 - Script Writing	3
RTVF425 - Documentary Making	3
Major Requirements	30
COMM325 - Animation Software	3
RATV230 - Radio-TV Workshop II	3
RATV315 - Television Production	3
RATV370 - Writing for Radio and TV	3
RATV425 - TV Directing	3
RATV430 - Radio Production	3
RATV435 - Radio-TV News	3
RATV440 - Digital media production	3
RATV495 - Senior Study in Radio and TV	3
RTVF410 - Art of Film	3
General Education Electives	6
GE**** General Education Electives	6
Major Elective	6
ME**** Major Elective	6

List of Major Electives - RTVF

Course Title	Cr
ADVR348 - Advertising Pitching	3
ADVR350 - Advertising Copywriting	3
ADVR370 - Psychology of Advertising	3
ADVR390 - Branding and Corporate Identity	3
ADVR400 - Global Advertising	3
ADVR410 - Advertising & Sales Promotion	3
ADVR460 - Advertising Creativity	3
ADVR470 - Advertising Workshop	3
ADVR485 - Advertising Campaign Design	3
ARTS200 - Foundation Drawing I	3
ARTS210 - Color Theory - Painting	3
ARTS250 - Foundation Drawing II	3
ARTS260 - Design Fundamentals - 2D	3
ARTS270 - Design Fundamentals - 3D	3
ARTS320 - Rendering and Perspective Techniques	3
ARTS330 - History of Modern Art	3
BMKT300 - Marketing Theory and Principles	3
CSCI631 - Fundamentals of Robotics	3
JORN200 - News Writing & Reporting	6
JORN285 - Travel Journalism	3
JORN370 - Arabic News Writing & Reporting	3

JORN375 - Journalism Workshop	3
JORN380 - Web Journalism	3
JORN385 - Citizen Journalism	3
JORN400 - Newspaper & Magazine Writing & Production	3
JORN440 - Reporting of Public Affairs	3
PREL360 - Public Relations Practice & Analysis	3
PREL375 - Specialized Writing in Public Relations	3
PREL380 - Communication Tools in Public Relations	3
PREL390 - Public Relations & Advertising	3
PREL415 - Public Relations and Marketing	3
PREL430 - Public Relations Campaign	3
PREL445 - Critical Inquiry & Public Relations	3
PREL450 - Public Relations Workshop	3
PREL455 - Public Speaking	3
RATV316 - Mobile Media	3
RTVF330 - Fundamentals of Makeup Artistry	3
RTVF420 - Editing	2
RTVF425 - Documentary Making	3
RTVF440 - Music Production	3
RTVF494 - Video Production and Post Production	3

5.6.6 PREL - BA in Communication Arts / Public Relations (108 Credits)

About the program

The Department of Communication Arts encourages embracing change, promoting inspiration, innovation, and critical thinking. The department provides the necessary skills to an array of routes towards careers that require creativity and professional communication.

Domain of Work

The domain provides students with knowledge of the theories of communication influencing how public relations is practiced while developing the skills they need for critical thinking, speaking and writing - the basic foundations for becoming a PR professional. Jobs in public relations include:

- Lobbyist, media liaison, copywriter, scriptwriter, corporate spokesperson, and public relations manager.
- Work in the various NGO.
- Public Relations jobs that focus on publicity and promotion include publicist, public information officer, and public relations director;
- Many organizations require a PR specialist specialized in writing press releases and planning events coordinate media coverage and promote a positive public image for the company.

Program Educational Objectives (PEOs)

The objective of the B.A. in Communication Arts, Public Relations Program is to have graduates that will:

1. Conduct research and evaluate information by appropriate methods that will enable students to have successful careers and pursue graduate studies.
2. Understand and apply the principles and laws of freedom of speech and press.
3. Think critically, creatively and independently.
4. Demonstrate ethical research, planning and execution of public relations efforts to engage communities and social justice globally.

Program Learning Outcomes (PLOs)

Upon completion of the B.A. in Communication Arts, Public Relations, students will have the ability to:

1. Evaluate and analyze relevant theories, philosophies, and practices of communication and public relations.
2. Coordinate to the planning of public relations activities, including the development of objectives, budgets, selection of strategies, and tactics.
3. Recognize the ethical component involved in responsible public relations practices.
4. Utilize persuasion and communication theories when formulating public relations tactics.
5. Use research results and analytical skills to guide the development of public relations activities and to evaluate their impact.
6. Demonstrate competency in strategic planning and problem solving.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	42
ADVR300 - Advertising Theory & Practice	3
ARTS350 - Photography	3
COMM200 - Introduction to Communication Studies	3
COMM205 - Introduction to Western Civilization	3
COMM220 - Rhetoric & Persuasion	3
COMM225 - Workshop	3
COMM265 - Performance Theory & Practice	3
COMM285 - Theories of Perception	3
COMM300 - Media Laws & Ethics	3
COMM310 - Research Methods in Communication Arts	3
COMM320 - Radio-TV Announcing	3

COMM330 - Media Planning & Audience Analysis	3
COMM400 - Media Management	3
GDES270 - Design Software I	3
Major Requirements	33
PREL300 - Public Relations Principles & Concepts	3
PREL360 - Public Relations Practice & Analysis	3
PREL375 - Specialized Writing in Public Relations	3
PREL380 - Communication Tools in Public Relations	3
PREL405 - Public Relations Event management	3
PREL420 - Crisis Communication in PR	3
PREL430 - Public Relations Campaign	3
PREL445 - Critical Inquiry & Public Relations	3
PREL450 - Public Relations Workshop	3
PREL455 - Public Speaking	3
PREL495 - Senior Study in Public Relations	3
General Education Electives	6
GE***** General Education Electives	6
Major Elective	12
ME***** Major Elective	12

List of Major Electives - PREL

Course Title	Cr
ADVR348 - Advertising Pitching	3
ADVR350 - Advertising Copywriting	3
ADVR370 - Psychology of Advertising	3
ADVR390 - Branding and Corporate Identity	3
ADVR400 - Global Advertising	3
ADVR410 - Advertising & Sales Promotion	3
ADVR460 - Advertising Creativity	3
ADVR470 - Advertising Workshop	3
ADVR485 - Advertising Campaign Design	3
ARTS200 - Foundation Drawing I	3
ARTS210 - Color Theory - Painting	3
ARTS250 - Foundation Drawing II	3
ARTS260 - Design Fundamentals - 2D	3
ARTS270 - Design Fundamentals - 3D	3
ARTS320 - Rendering and Perspective Techniques	3
ARTS330 - History of Modern Art	3
BMKT300 - Marketing Theory and Principles	3
COMM325 - Animation Software	3
JORN200 - News Writing & Reporting	3
JORN285 - Travel Journalism	3
JORN370 - Arabic News Writing & Reporting	3

JORN375 - Journalism Workshop	3
JORN380 - Web Journalism	3
JORN385 - Citizen Journalism	3
JORN400 - Newspaper & Magazine Writing & Production	3
JORN440 - Reporting of Public Affairs	3
PREL390 - Public Relations & Advertising	3
PREL432 - Social Media in Public Relations	3
RATV230 - Radio-TV Workshop II	3
RATV315 - Television Production	3
RATV316 - Mobile Media	3
RATV370 - Writing for Radio and TV	3
RATV425 - TV Directing	3
RATV430 - Radio Production	3
RATV435 - Radio-TV News	3
RTVF330 - Fundamentals of Makeup Artistry	3
RTVF340 - Script Writing	3
RTVF400 - Talk Show	3
RTVF410 - Art of Film	3
RTVF425 - Documentary Making	3
RTVF440 - Music Production	3
RTVF494 - Video Production and Post Production	3

5.7 Program of Study – Graduate programs (Sciences Majors)

5.7.1 MCSCI - MS in Computer Science (36 Credits)

About the program

The program will enable the student to get advanced tools to respond to technological changes, and the development of knowledge and skills through the material, research projects. Students will learn how to communicate effectively and professionally and to work as a team and how to identify, design and implement of appropriate software solutions to problems within the limits of professional ethics and responsible behavior. In addition, students learn how to conduct research and the steps required doing so. This program will lead the student to assume leadership positions in industry, government and to pursuit further graduate studies.

Domain of Work

Students will have a range of opportunities open to them as Computer Science Master Graduate. Jobs directly related to the degree include: Computer and Information Research Scientists, Network and Computer Systems Administrators, Computer Systems Analysts, Computer Network Architects, Software Developers, Senior Database Administrators, and Senior Web Developers

Program Educational Objectives (PEOs)

Upon successful completion of a Master in Computer Science, students will be able to demonstrate a broad knowledge of Computer Science and demonstrate the ability to recognize, design and implement efficient software solutions to problems. They will have the ability to communicate effectively and become successful professionals to gain employment and to be accepted into a Computer Science Ph.D. program.

Program Learning Outcomes (PLOs)

Students will have the ability to:

1. Identify, analyze, and synthesize scholarly literature relating to the field of computer science
2. Have a breadth of knowledge in different current and advanced computer science topics.
3. Evaluate multiple points of view for analyzing and integrating information to conduct critical reasoned arguments.
4. Self-learn and comprehend emerging scientific trends and to propose specific improvements.
5. Identify computing problems and formulate corresponding research plans to solve problems in any related discipline.
6. Communicate and present research outcomes to a range of audience both orally and in writing.

Curriculum

Course Title	Cr
Core Requirements	18
CSCI510 - Design and Analysis of Algorithm	3
CSCI511 - Distributed Operating Systems	3
CSCI512 - Information Retrieval	3
CSCI513 - Advanced Database Systems	3
CSCI514 - Advanced Computer Networks	3
CSCI515 - Computer Ethics	3
CSCI595 - Special Graduate Skills	0
Major Requirements	3
CSCI598 - Project	3
Major Elective	15
ME***** Major Elective	15

List of Major Electives - MCSCI

Course Title	Cr
BIOC390 - Bioinformatics	3
CENG566 - Machine Learning	3
CSCI362 - Network Security	3
CSCI599 - Scientific Research	3
CSCI611 - Object Oriented Software Engineering	3
CSCI612 - Professional Issues in Computing	3
CSCI613 - Software Testing and Quality Assurance Management	3
CSCI614 - Software Engineering of Distributed Systems	3
CSCI615 - Data Mining and Data Warehouse	3
CSCI621 - Wireless Networks	3
CSCI622 - Cloud Computing	3
CSCI624 - Next-Generation IP Networks	3
CSCI625 - Mobile Systems and Applications	3
CSCI631 - Fundamentals of Robotics	3
CSCI633 - Image Processing	3
CSCI634 - Mathematics for Computer Science	3

5.7.2 MMATH - Masters in Applied Mathematics (36 Credits)

About the program

The Master of Applied Mathematics offered by the department of mathematics and physics at LIU is designed for candidates holding a Bachelor degree in Mathematics, or equivalent, to undertake further studies in mathematics, taught by experts, across a wide range. The program offers the students an opportunity to broaden their knowledge in several fields of mathematics and its applications. The wide and varied choice of courses prepares the students for multidisciplinary research and education, moreover, it opens new horizons for the graduates in physical sciences, engineering and computer science. Graduate students can be supported by graduate teaching assistantships.

Domain of Work

Career opportunities for the holders of the master degree of mathematics are diverse and varied. They include academia, teaching and research. Master's degree recipients who feel a calling to teach, pursue careers teaching mathematics in educational institutes at various levels, and those who feel a calling for research, can pursue a Ph.D. in mathematics (either pure or applied mathematics). Moreover, a holder of MS in mathematics can work as a quantitative analyst or a statistician.

Program Educational Objectives (PEOs)

Individuals who have completed a master's degree in mathematics should be equipped to:

1. Find employment utilizing their mathematical knowledge;
2. Use their mathematical knowledge to solve problems; and
3. Undertake research studies related to mathematics.

Program Learning Outcomes (PLOs)

Students completing a Master of mathematics should:

1. Gain knowledge in foundational areas of mathematics;
2. Communicate mathematics accurately, precisely and effectively;
3. Develop mathematical thinking;
4. Apply mathematical knowledge; and
5. Be able to solve mathematical problems using technology.

Curriculum

Course Title	Cr
Core Requirements	24
CSCI595 - Special Graduate Skills	0
MATH460 - Functional Analysis	3
MATH502 - Algebra	3
MATH505 - Numerical linear algebra	3
MATH510 - Real Analysis	3
MATH522 - Topology	3
MATH560 - Modern Differential Geometry	3
MATH599 - Thesis	6
Major Elective	12
ME***** Major Elective	12

MATH524 - Mathematical Fluid Dynamics I	3
MATH525 - Finite Element Methods	3
MATH530 - Distribution Theory	3
MATH534 - Mathematical Fluid Dynamics II	3
MATH536 - Field Theory	3
MATH542 - Algebraic topology	3
MATH544 - Computational Fluid Dynamics	3
MATH546 - Lie Groups and Lie Algebra	3
MATH550 - Non-Euclidean Geometries	3
MATH554 - Continuum Mechanics	3
MATH555 - Dynamical Systems	3
MATH556 - Matrix Theory	3
MATH565 - Applied Nonlinear Partial Differential Equations	3
MATH566 - Graph theory	3
MATH570 - Riemannian Geometry	3
MATH571 - Fractal Geometry	3
MATH575 - Differential Topology	3
MATH576 - Statistics	3
MATH582 - Mathematics Education	3
MATH583 - Topics in Mathematics	3
MATH585 - Topics in Applied Mathematics	3
MATH586 - Topics in Statistics	3

List of Major Electives - MMATH

Course Title	Cr
MATH270 - Ordinary Differential Equations	3
MATH330 - Partial Differential Equations	3
MATH500 - Complex Analysis	3
MATH506 - Higher Linear Algebra	3
MATH511 - Analysis in Euclidean Spaces	3
MATH515 - Advanced Numerical Analysis	3
MATH516 - Optimization Theory	3
MATH518 - Topics in Number Theory	3

5.7.3 MFDT - Masters in Food Technology (36 Credits)

About the program

The Food Technology MS program (FDT) at Lebanese International University (LIU) is an academic program housed in the School of Science. It is administered through the Department of Nutrition and Food Sciences. FDT Master's program mission is to prepare students for prosperous careers within the food industry, academia and government. FDT master program prepares graduates for employment as food scientists, food chemists, food microbiologists, processing managers, research scientists, educator, and related positions. The objective of our teaching, research and outreach programs is to enhance the safety, quality and availability of foods. Emphasis is given to commodities of importance within our region, including muscle food, nuts, vegetable, cereals, fruits and confectionary.

Domain of Work

Graduates of this program are able to work in food establishments, in production, monitoring, handling, marketing, distribution, and product innovation. They will be able to teach course at BS level in food technology. They are also able to in governmental organizations in food monitoring, and in research institutes.

Program Educational Objectives (PEOs)

1. Develop the scientific skills of students to deal and manage challenges in food production sector
2. Act closely with food industry to improve and develop new potential food products with high standards
3. Prepare themselves to work in multidisciplinary work groups under diverse production environments

Program Learning Outcomes (PLOs)

1. Apply learned knowledge in theoretical and practical fields of food science and technology
2. Identify and solve food production emerging problems
3. Acquire the knowledge to deal with new emerging technologies
4. Design and develop new food products
5. Apply the knowledge to assure food quality and safety of food products
6. Use their learning information to be involved in food research projects

Curriculum

Course Title	Cr
Core Requirements	18
FDSC500 - Biometrics and risk assessment	4
FDSC510 - Physiochemical aspect of foods	3
FDSC520 - Advanced Food Engineering	4
FDSC545 - Food Analysis	3
FDSC555 - product innovation and development	3
FDSC596 - Graduate Seminar	1
Major Requirements	3
FDSC597 - Project	3
Major Elective	15
ME***** Major Elective	15

List of Major Electives - MFDT

Course Title	Cr
FDSC530 - Advanced dairy processing	3
FDSC535 - Chocolate and its products	3
FDSC540 - Food Additives: Practical Applications	3
FDSC550 - Food packaging	3
FDSC560 - Fruits and their products	3
FDSC565 - Grains and Baking	3
FDSC570 - Nuts and roasting	3
FDSC575 - Oil production	3
FDSC580 - Quality aspects of meat fish and poultry	3
FDSC585 - Waste treatment in the food industry	3
FDSC590 - Advanced topics in Food biotechnology	3
FDSC595 - Sensory Evaluation of Food	3
FDSC598 - Graduate Project	3

5.8 General Education Electives – School of Arts and Sciences

Code	Course Title	Cr			
AGRS235	Landscape Horticulture	3			
ARAB220	Creative Writing in Arabic	3			
ARTS200	Foundation Drawing I	3			
ARTS204	Introduction to Theater	3			
ARTS350	Photography	3			
ARTS390	Mosaic I	3			
BHTM315	Business Etiquette & Protocol	3			
BHTM375	International Cuisine	3			
BIOL200	General Biology I	3			
BMED210	Introduction to Community Health	3			
CHEM200	General Chemistry	3			
CHEM250	Organic Chemistry I	3			
CHEM310	Physical Chemistry I	3			
COMM200	Introduction to Communication Studies	3			
COMM255	Theories of Mass Media	3			
CULT210	New World Order	3			
EDUC201	Foundation of Education	3			
ENVR200	Environmental Science	3			
ENVR205	Environment & Health	3			
ENVR320-	Global Health Challenges	3			
FDSC390	Cooking Essentials and Recipe Modification	3			
FREN200	Elementary French	3			
HIST200	Modern Japan	3			
HIST205	Modern China	3			
HIST245	Modern Africa	3			
HIST250	Europe in the Twentieth Century	3			
HIST255	International Relations in East Asia Since 1945	3			
HIST260	Modern Spain	3			
HIST270	Modern Latin America	3			
HIST350	Contemporary World History	3			
HUMN200	Community Service	3			
HUMN210	Human Rights - Global Perspective	3			
HUMN215	Introduction to Civic Society	3			
INET01	Innovative and Entrepreneurship Startup Essentials	3			
LANG200	Beginners Russian	3			
LANG201	Beginners Hebrew	3			
LANG212	Conversational Hebrew	3			
LANG221	Introduction To Italian	3			
LANG222	Introduction To French	3			
LANG223	Introduction To Spanish	3			
LANG224	Introduction To Deutsch	3			
LANG225	Introduction To German	3			
LANG227	Introduction To Chinese	3			
LANG228	Introduction To Persian	3			
LANG229	Introduction to Turkish	3			
LANG230	Sign Language	3			
LANG300	Intermediate Russian	3			
MATH245	Statistics for Health Sciences	3			
NSCI200	The Universe and the Earth	3			
NSCI210	Biodiversity and the Evolution of Life	3			
NSCI270	Environmental Ethics	3			
NUTR200	Nutrition and Health	3			
PHED200	Sports and Health	3			
PHIL200	Introduction to Philosophy	3			
PHIL205	Introduction to Ethics	3			
PHIL210	World Religions	3			
PHYS210	Mechanics	3			
PHYS280	Electricity and Magnetism	3			
PHYS390	Astronomy	3			
POLS200	Introduction to Political Sciences	3			
POLS205	World Current Affairs	3			
POLS215	Modern Arab Political Thought	3			
POLS230	Lebanese Labor Law	3			
POLS300	Lebanese Politics	3			
POLS316	Politics of Modern Syria	3			
POLS440	The Arab Israeli Conflict	3			
RATV200	Short Film Making	3			
SES201	Soft & Entrepreneurship Skills Development	3			
SPAN250	Spanish level 2	3			
SSCI200	Introduction to Sociology	3			
SSCI205	Introduction to Psychology	3			
SSCI210	International Politics	3			
SSCI215	Introduction to Music	3			
SSCI220	Introduction to Anthropology	3			
SSCI225	Introduction to Cultural Anthropology	3			
SSCI235	The Individual and Modernity	3			
SSCI250	The Cultural Landscape	3			
SSCI255	Intellectual History of the Twentieth Century	3			
SSCI265	Geography of the Islamic World	3			
SSCI285	Gender and Global Issues	3			
SSCI310	Foundations of the Social Sciences	3			
SSCI400	Global Understanding	3			
SURV315	Geology	3			

5.9 Course Description – School of Arts and Sciences

ADVR300 Advertising Theory & Practice (3 credits)

Basic understanding of advertising and the operation of its system. Emphasis on personal and professional development in the field of advertising. Examination and application of basic principles and techniques of advertising writing. Focus on advertising media, managers, strategies, creative planning execution and social effects. Prerequisite(s): COMM 200

ADVR350 Advertising Copywriting (3 credits)

This class is based upon the premise that students' ability to think creatively is as important as their ability to write. Students will be taught how to approach a problem with a creative strategy, and then how to solve it with a well-crafted advertisement.

ADVR370 Psychology of Advertising (3 credits)

This course will study the mass psychology theories and human collective behaviors. It will emphasize the psychological impressions and styles of advertising that carries the message to the consumer and cater to their emotions. This class will also cover the most controversial and long-standing issues concerning advertising and consumer socialization and the psychological effects of special selling techniques

ADVR400 Global Advertising (3 credits)

This course covers the study of international advertising. It emphasizes the important aspects of cross-cultural communication and the factors of the international advertising mix. There will be an emphasis on the multinational firms of advertising also.

ADVR410 Advertising & Sales Promotion (3 credits)

This course will reveal the marketing orientation and its reflection in the discourse and practice of management. Students will witness an emphasis on marketing-as a way of seeing and responding to environmental changes and developments-that has become deeply rooted in the institutions of contemporary societies. Prerequisite(s): COMM 200

ADVR420 New Media in advertising (3 credits)

This class provides students with a close knowledge and understanding of the Social media platforms and how the latter have created new forms of advertising: From Facebook to Twitter and YouTube to LinkedIn and Snapchat and Instagram. As such, students will be able to illustrate the different elements of the social media advertising toolkit, enabling them to get into the workforce with the knowledge and skills needed to launch any social advertising campaign

ADVR470 Advertising Workshop (3 credits)

Students will have the chance to work through the an organized structure and display of technical techniques of advertising. Prerequisite(s): Senior Standing

ADVR485 Advertising Campaign Design (3 credits)

This course is designed to introduce you to the skills necessary for the Advertising Campaign Process. This course will not only help you understand the tools and techniques utilized to prepare a comprehensive advertising campaign, but also understand the effort required to accomplish this task and ultimately, the conduct expected in the workplace during the process

ADVR495 Senior Study in Advertising (3 credits)

Students will gain a complete comprehension and display of an advertisement campaign. Prerequisite(s): Senior Standing

ARTS200 Foundation Drawing I (3 credits)

The Basic studies and introduction to drawing tools and instruments and the Theories & Techniques in the various areas of drawing such as: human figure, historical houses and landscape. This course will concentrate as well on advertising drawings, including shading, and black and white. Prerequisites: ENGL 150

ARTS210 Color Theory - Painting (3 credits)

This course focuses on the optical phenomena of color and their application in visual communication. Studies, hue, value, and saturation, and their implications for color activity legibility, and spatial illusion in traditional workshop setting with its relation to Graphic and Interior design. Students will learn as well the theories and procedures of painting and its techniques. Co-requisite: Arts 200

ARTS215 History of Art

This course guides students learning to place any work of art in its proper chronological context. This course will present the History of Art in its major forms and cultural contexts from the prehistoric world until the end of 21st century.

ARTS250 Foundation Drawing II (3 credits)

This studio and theory course is a continuation of drawing I, it concentrates on the techniques of drawing in the construction of the human body, including the refinement of skills and methods of graphic representation. It will also cover the drawing of objects in 3-D. Students will use traditional and non-traditional media; the course stresses figure, portraiture and composition. Prerequisite: ARTS 200

ARTS260 Design Fundamentals - 2D (3 credits)

This course will introduce students to the basic elements of design, such as the meaning and definitions of elements. It concentrates as well on the factors of all design principles mostly in 2-D with projects of practice. Prerequisite: ARTS 200.

ARTS270 Design Fundamentals - 3D (3 credits)

The student in this course will be introduced to the principles of design with all the elements involved in developing projects in 3-D such as Plasticine – cork plaster and metal. The student will be asked to research his work and perform it by hand in the studio. Prerequisite: ARTS 210 and ARTS 260

ARTS300 Painting (3 credits)

This course introduces the students to the tools and basic processes of painting. Students will work with oil and acrylic and will explore the many ways paint can be handled. The course is also an introduction to the preparation of materials and specific exercises will be given so that students will explore color, light, texture, transparency and composition.

ARTS320 Rendering and Perspective Techniques (3 credits)

This course introduces students to the systems of perspective developed during the Renaissance as a means of creating the illusion of 3-dimensional space on a 2-dimensional surface. Using 1-, 2-, and 3- point perspective, students will learn to effectively render the illusion of space. Students will learn a variety of creative architectural drawing techniques using various media, and both free – hand sketching and technical rendering methods will be emphasized. This course is a common course given for both Graphic & Interior design students. Prerequisite: ARTS 250

ARTS350 Photography (3 credits)

Introducing students to the use of photography as a helpful tool for Graphic & Interior Design, the use of the camera, angles, lenses, (hardware). Students will learn terms and theory, film developing, printing, enlarging, composition, and pictorial techniques as forms of visual communication along with the demonstration of historic houses, Ruins, aged / young people, natural views and contemporary applications, from black & white to colored photos.

BIOC300 Biochemistry I (General) (4 credits)

An introduction to the chemistry of biologically important amino acids, proteins, carbohydrates, lipids, vitamins and hormones. Enzyme kinetics and catalysis, protein structure and function, and introduction to intermediary metabolism are also included. Prerequisite: BIOL & CHEM 250 or CHEM 255

BIOC310 Medical Biochemistry (4 credits)

Medical Biochemistry is designed to present the basics of biochemistry, thus including a study of structure of amino acids, carbohydrates, lipids, proteins, enzymes, and nucleotides, in addition to their metabolism, bioenergetics, membranes and signaling systems, integration and regulation of the major metabolic pathways, nitrogen metabolism, myoglobin, hemoglobin, and hemostasis, with emphasis on the biochemical basis of human disease. Prerequisite: BIOL 200 & CHEM 250

BIOC350 Biochemistry II (Intermediary) (3 credits)

This course includes a survey of basic principles of biochemistry and molecular biology, emphasizing broad understanding of chemical events in living systems in terms of metabolism, and structure-function relationships of biologically important molecules i.e. the proteins, carbohydrates, and lipids. Brief introduction of DNA replication, RNA transcription, and translation are also covered. Prerequisite: BIOC 300

BIOC350L Biochemistry II Lab (1 credit)

It acquaints students with basic biochemical laboratory techniques like isolation, purification and identification of proteins, carbohydrates, lipids and nucleic acids using centrifugation, different types of chromatography techniques and electrophoresis. Co-requisite: BIOC 350

BIOC375 Enzymology (3 credits)

This course provides students with thorough foundation of theoretical and practical approach to understand some functional mechanisms of the active centers of the enzymes with emphasis on experimental methods for enzyme isolation, purification, and measuring activities and kinetics of proteins.

BIOC390 Bioinformatics (3 credits)

The general objective of the course is to provide an overview to the fields of bioinformatics and genomics. Topics to be discussed include: Introduction to the storage, representation, integration, analysis, and methods to analyze extremely

large data sets of genomic information such as DNA sequences and expression from DNA microassays; introduction to genomics and related fields including functional genomics, structural genomics, proteomics, and an overview and discussion of basic sequence manipulations and analysis. Prerequisites: BIOL 365/ BIOC 300

BIOC400 Biochemistry III (Protein Structure & Function) (3 credits)

An advanced course emphasizing topics such as chemical catalysis, enzyme mechanism, receptors, channels, antibodies, and other functional proteins. Advanced topics on DNA and RNA elements are also discussed. Prerequisites: BIOC 350

BIOC445 Biotechnology (3 credits)

The applications of the methodologies of cell and molecular biology in the rapidly-evolving biotechnology and biopharmaceutical industries with an emphasis on the major sectors involving human therapeutics, human diagnostics, and genomics. Cell and molecular biology technologies adapted to mass production techniques to produce the products of biotechnology are surveyed. Typical pathways of product development from original basic research, product inception, clinical trials, regulatory approval, and commercialization are covered. Students will examine the current programs of the research and development of selected biotechnology and pharmacological corporations. Prerequisites: BIOL 365 / BIOC 300

BIOC450 Advanced Lab Techniques in Biochemistry (2 credits)

A continuation of BIOC II laboratory techniques in which students are exposed to more of chromatography and electrophoresis techniques in nucleic acids and protein purification and sequencing. It also introduces students to gene amplification, blotting and hybridization techniques. Spectroscopic and immunochemical techniques are also covered. Studies of the processes associated with the scientific methods of hypothesis testing will also be addressed. Emphasis is placed on how to formulate hypotheses, design experiments analyze the data statistically, and use the data to draw conclusions related to the initial hypotheses. Prerequisites: BIOC 400

BIOC480 Molecular Genetics (3 credits)

This course includes a review of the basic principles of genetics, organization of human genome, human genome project, survey of medical and clinical genetics, approaches to the identification of disease-causing genes and gene therapy

BIOC485 Modern Topics in Biochemistry (3 credits)

Modern Topics in Biochemistry

BIOC495 Biochemistry Project (3 credits)

The main purpose of the project is to demonstrate the student's ability to make independent use of information and training and to finish objective evidence of constructive powers in a chosen field. Students must present a thesis that must show familiarity with previous work in the field and must demonstrate ability to carry out research and to discuss results and conclusions. Prerequisites: Senior standing

BIOL100 Freshman Biology I (3 credits)

This course is designed to introduce freshman students to key biological concepts that are fundamental to plant and animal biology. Students will be acquainted with the classification of other organisms and familiarized with the interrelationships among living things and their non-living environment.

BIOL160 Freshman Biology II (3 credits)

This course concisely introduces the student to the organization of living systems, energy transfer, continuity of life, and classification of living things. The topics include: introduction to biological sciences; structure and functions of cells and cellular organelles; cell division; cellular respiration; photosynthesis; heredity; animal development; and organization to animal body.

BIOL200 General Biology I (3 credits)

An introductory level course to energy transfer through living organisms, cell biology, membrane transportations, genetics, human physiology, evolution, and morphology and physiology of organ systems, understanding diversity with emphasis on the animal kingdom and evolution. Protozoans are also studied. Prerequisites: ENGL 150; BIOL 150, or S grade on the Biology Placement Test

BIOL200L General Biology I Lab (1 credit)

This lab course introduces principles of microscopy with emphasis on viewing different animal tissues and cells. A detailed study of the animal kingdom including evolution, classification, and anatomical morphology. Co-requisites: BIOL 200

BIOL250 General Biology II (3 credits)

A brief study of viruses and prokaryotes, protists and fungi, and a detailed study of the plant kingdom, with particular focus on the classification, evolution, ecology, structure and function of the angiosperms and gymnosperms. Prerequisites: BIOL 200

BIOL250L General Biology II Lab (1 credit)

Students in this course study the anatomical morphology of representative samples of the plant phyla. Experiments on photosynthesis and separation of plant pigments are carried out, plant collection and herbarium specimen. Co-requisites: BIOL 250

BIOL275 Cell and Molecular Biology (3 credits)

The course discusses the basic concepts of cell and molecular biology: macromolecular assembly, biomembrane structure and function, storage and expression of genetic information, biogenesis, traffic, reception and transduction, cytoskeleton and extracellular matrix, and the cell cycle. Basic laboratory methods in Cell & Molecular Biology are also introduced. Prerequisites: BIOL 200

BIOL275L Cell and Molecular Biology Lab (1 credit)

Experiments to include cellular fractionation, DNA and RNA isolation, electrophoresis, DNA digestion, plasmid isolation, bacterial transformation, and polymerase chain reaction applications. Co-requisites: BIOL 275

BIOL315 Animal Behavior (3 credits)

Course description: This course exposes students to evolutionary and ecological processes that promote the vast diversity of behaviors found on our planet. It focuses on how animals process and respond to environmental stimuli. It also examines the ecology of behavior, stressing the links between environmental factors and behavioral patterns, group formation, territoriality, colonial breeding, and reproductive behavior. The last part of the course explores the evolution of social behaviors, sexual selection, mating and parental care.

BIOL315L Animal Behavior Project (1 credit)

This course is a practical application to the knowledge that is acquired by students in the Animal Behavior course. Here, students will learn how to select a project topic, design and conduct experiments, collect data, control variables as well as present their work either in poster or oral presentation sessions.

BIOL320 Entomology (3 credits)

An introduction to study of insects, their diversity, classification, morphology, biology, behavior, and their medical, ecological, and agricultural importance

BIOL325 Biology of Invertebrates (3 credits)

A study of invertebrates emphasizing on their morphological and functional diversity, classification, development and adaptation.

BIOL335 Ecology (3 credits)

Basic concepts in ecology with emphasis on natural resource ecosystems. Major topics covered include the physical environment, population ecology, community ecology, ecological energetics, biological diversity & conservation biology, global climate change, and ecosystem management, in addition to species-species and species-environment relations. Prerequisites: BIOL 200

BIOL335L Ecology Lab (1 credit)

Introduction to spreadsheets, plant competition, demography, estimating population size, spatial pattern in the forest, functional response, mimicry, and effective population size. A study of biotic and abiotic factors that influence populations and species, in addition to field trips to investigate different Lebanese ecosystems. Co-requisites: BIOL 335

BIOL360 Human Physiology & Anatomy (4 credits)

Studies the structure and function of the following body systems: blood, lymphatic, cardiovascular, respiratory, digestive, urinary, and reproductive. Prerequisites: BIOL200

BIOL360L Human Physiology & Anatomy Lab (1 credit)

Human Physiology & Anatomy Lab

BIOL365 Genetics (3 credits)

Basic concepts of prokaryotic genomics, Mendelian inheritance, phylogenetic inheritance, linkage and mapping, population genetics, evolution, DNA replication, gene expression, mutation, gene regulation, extranuclear inheritance, bacterial and viral genetics, and recombinant DNA technology are covered. Prerequisites: BIOL 275

BIOL375 Plant Physiology (3 credits)

This course is an overview of the basic mechanisms underlying plant function, growth and development. General topic areas will include: plant structure and cell biology, plant-water relations and mineral nutrition, long-distance transport phenomena, photosynthesis, respiration and plant metabolism, plant growth regulators, plant development, plant stress physiology and plant biotechnology. Prerequisites: BIOL 250

BIOL375L Plant Physiology Lab (1 credit)

Photosynthesis, determination of essential nutrients by hydroponics, sexual & asexual reproduction. Nastic movements and tropisms are also observed, stress physiology, osmosis, diffusion and plant competition. Co-requisites: BIOL 375

BIOL380 Vascular Plants (3 credits)

Study of the different tissues that compose biological systems and organs: epithelial, connective, nervous and muscular tissue) with emphasis of tissue origin, development, differentiation, function in addition to staining techniques and microscopy.

BIOL385 Microbiology (3 credits)

Characteristics of microorganisms and parasites - emphasizing mechanisms by which they cause disease in humans. Prerequisites: BIOL 200

BIOL385L Microbiology Lab (1 credit)

Sterile techniques, media preparation, streaking, identification, isolation and purification of different bacterial strains are performed. Co-requisites: BIOL 385

BIOL415 Endocrinology (3 credits)

The role of hormones in growth, metabolism and reproduction, molecular mechanisms of hormone action, and feedback control of hormone secretion. Prerequisites: BIOL 345

BIOL425 Immunology (3 credits)

This course is designed to teach the basic tenants of Immunology. It also undertakes all the important areas of contemporary immunological knowledge and simultaneously provides a historical view of the discoveries that have built the groundwork of modern immunological thought and mechanism of fighting disease. The two functional divisions of the immune system, the innate and the adaptive immune system, antigens, antibodies and lymphocytes are studied, along with the cells and the soluble factors responsible for the immune response. The course will also describe principles of immunology applicable to concepts in clinical medicine; introduction to diagnosis and management of human immunopathologic disorders. Prerequisites: BIOL 345

BIOL435 Developmental Biology (3 credits)

It describes the major morphological features of the various stages of animal development with the emphasis on mammals, prenatal and postnatal stages. The changes that cells undergo as they acquire specialized roles during development, reviews the molecular mechanisms underlying cell changes during development and how the overall animal body plan is established, show how development reveals an underlying unity among diverse forms of life, yields important insights into evolution, and understand the major experimental approaches used in the study of development. Prerequisites: BIOL 345

BIOL435L Developmental Biology Lab (1 credit)

A study of animal embryos at different developmental stages by a choice of a representative animal model of every phylum to perform a comparative study. Co-requisites: BIOL 435

BIOL450 Modern Topics in Biology (3 credits)

Modern Topics in Biology

BIOL485 Neurobiology (3 credits)

This course will provide a detailed exploration of the basic physiological processes that occur within the nervous systems of various organisms. An interdisciplinary overview of the central nervous system, drawn from current knowledge and research on vertebrate and invertebrate neurobiology.

BIOL490 Seminar (1 credit)

Selected recent and contemporary advances in the various fields of the biological sciences and affiliated disciplines are introduced. Prerequisites: Senior Standing

BMED205 Biophysics (3 credits)

Introduction to the physical sciences, principles and properties, as applied to biology and medicine. The course has a special emphasis on elasticity of the biological system, biomechanics, bioelectricity, physics of heat, lights, blood circulation, hearing and vision, and topics in biomedical imaging and analysis: echography, magnetic resonance, and nuclear radiation. Prerequisite(s): ENGL 150

BMED360 Hematology (3 credits)

The course will focus on studying the structure and function of formed elements of blood, bone marrow and plasma, production, release and survival; morphological characteristics of normal and abnormal cells; quantitative and qualitative abnormalities. Prerequisites: BIOL 345

BMED360L Hematology LAB (1 credit)

Lab applications focusing on the measurement and analysis of CBC's parameters, kinds of anemia, blood films, quantitative and qualitative abnormalities in white blood cells line (acute and chronic leukemia's).

BMED370 Parasitology (2 credits)

A basic course primarily designed for biology majors who desire an understanding of human and animal parasitology, including classification, morphology, development, host-parasite relationships and physiology.

BMED370L Parasitology Lab (1 credit)

This course will allow students to acquire and master technical ways for diagnosis of parasitic illnesses of different sources: microscopic examination, staining and immuno-histological techniques.

BMED380 Introduction to Quality Control and Accreditation (2 credits)

This course convey to students a basic understanding of quality management and accreditation process of the Lebanese health care organizations, to understand how to collect, organize and interpret data and to apply them for continuous improvement in terms of practice and quality management.

BMED390 Medical Lab Management and Professional Ethics (1 credit)

Medical Lab Management and Professional Ethics.

BMED420 Basic Life Support (1 credit)

An introductory course to manage emergency cases, it includes practice on CPR, causality transport and main supportive measurements.

BMED425 Serology and Blood Banking (3 credits)

The course focus on studying the principles of serology, main serological tests, activities of blood banking, cross match, blood transfusion and separation of blood element, packed platelets, packed blood cells, congealed plasma. Prerequisite: BMED 360

BMED425L Serology and Blood Banking Lab (1 credit)

This lab covers the different types of serological reactions: direct and indirect agglutination, precipitation, coombs testing, pre-transfusion testing and cross matching as well as different techniques of preservation of different blood components.

BMED430 Medical Microbiology (3 credits)

This course will focus on studying viruses and fungi, their classification, transmission, physiology, main associated syndrome, and technical analysis. Prerequisite: BIOL 385

BMED430L Medical Microbiology Lab (1 credit)

This lab covers different techniques used in diagnosis of viral and fungal illness such as cultures, immune-serological and molecular techniques. Co-requisite: BMED 430.

BMED435 Carcinogenesis and Oncology (3 credits)

Carcinogenesis and Oncology covers cutting-edge science on cancer and cancer related topics. It particularly emphasizes the understanding of the genesis of cancer and its proliferative mechanisms, signal transduction pathways and the role of oncogenes and tumor-suppressor genes, diagnostics and clinical approaches to understanding cancer, and latest technology from cellular/molecular to genomics and nanodevices in deciphering the etiology, epidemiology, diagnosis and prognosis of one of the leading causes of deaths around the globe.

BMED445 Pathophysiology (3 credits)

This course studies the mechanisms, etiologies, risk factors and complications of diseases processes. It emphasizes on the clinical signs and symptoms, history, prognosis and epidemiology of diseases. Study of pathological imbalances including cellular adaptation and injury, fluid compartment exchanges with edema and dehydration, electrolyte functions, control and imbalances, acidosis and alkalosis, nervous system injuries and responses, sensory imbalances, skeletal system injury and repair, soft tissue injury and repair, and muscle injury and dysfunction. Prerequisites: BIOL 345 & BIOL 385

BMED445L Clinical Case Conference (1 credit)

Case studies are given in this course through which students learn how to link between physical and physiological features and patho-physiological features in diseases. Co-requisites: BIOL 445

BMED450 Clinical Chemistry (3 credits)

The course introduces students to the principles and procedures of various tests performed in Clinical Chemistry. It presents the biochemical and physiological basis for tests, the principle and procedure for the test, and the clinical significance of the test results, including quality control and normal values. It also includes basic chemical laboratory

technique, chemical laboratory safety, electrolytes and acid-base balance, proteins, carbohydrates, lipids, enzymes, metabolites, endocrine function and toxicology. Prerequisites: Senior standing

BMED450L Clinical Chemistry Lab (1 credit)

The course includes direct applications of some clinical tests such as glucose, lipids, enzymes, hormones, etc... from blood and urine. Co-requisites: BMED 450

BMED460 Histopathology (3 credits)

This course deals specifically with tissue abnormalities, study of smears and aspirates in cytopathology, autopsy practice where the cause of death is identified by gross and histological examination of the dead.

BMED465 Modern Topics In Biomedical Sciences (3 credits)

The course will cover special techniques in laboratory diagnosis such as cytogenetic analysis, flow cytometry, DNA technologies, and rare enzymatic essays. A special part is devoted to Bioterrorism and recombinant technologies.

BMED485 Clinical Assessment and Techniques (3 credits)

The course includes theoretical and direct applications of main medical laboratory tests: Hematology, Serology, Urine, and stool analysis. Prerequisites: BMED 445

CHEM100 Freshman Chemistry I (3 credits)

This course is a general introductory chemistry course designed for students in all majors. It will introduce and discuss the main properties of chemical compounds which will enable students to: Acquire a deep understanding of basic chemical principles, gain an appreciation of Chemistry, including the relationship to other disciplines and to the universe, prepare for future Coursework in Chemistry, improve problem-solving skills and critical-thinking skills.

CHEM160 Freshman Chemistry II (3 credits)

This course will cover the fundamental principles of chemistry such as the properties of gases and mass relationship in chemical reactions, atomic structure and bonding, molecular geometry, periodic properties and chemical reactions of elements. The basic concepts of chemical equilibrium, thermo-chemistry, electrochemistry and chemical kinetics will be also covered.

CHEM200 General Chemistry (3 credits)

Basic principles of chemistry, electronic structure of the atom, chemical periodicity, molecular structure and bonding, acids and bases and the states of matter, rates of chemical reactions, and chemical equilibrium are covered in this course. Prerequisites: ENGL 150; CHEM, or S grade on the Chemistry Placement Test Prerequisites: CHEM160, ENGL101. Co-requisites: CHEM200L.

CHEM200L General Chemistry Lab (1 credit)

The laboratory work involves hands-on experience with chemical systems. Experiments include basic calorimetry, a limited qualitative and quantitative analysis scheme, properties of gases, acid-base and redox titrations. Co-requisites: CHEM 200

CHEM250 Organic Chemistry I (3 credits)

Organic Chemistry will be classified into families, and the physical and chemical properties of each family will be discussed. Organic reactions will be viewed for their synthetic value, and Mechanistic Theory of Reactions and Structural Theory will be applied. A review of basic concepts of molecular structure, chemical bonding, molecular geometry, electronic and atomic structure, and acid-base chemistry, in addition to basic chemistry of alkanes, alkenes and alkyne families will be a main focus in this course. The value of stereochemical isomers will be stressed including conformational, geometrical and optical isomers. Prerequisite: CHEM 200.

CHEM255 Basic Organic Chemistry (3 credits)

This course is designed for non-majors. It provide an introduction to the structure, isomerism and chemistry of alkanes, alkenes and some representative functional groups such as alcohols, ethers, aldehydes, ketones, carboxylic acids, amines and amides. Prerequisite: CHEM 200.

CHEM255L Basic Organic Chemistry Lab (1 credit)

The laboratory work involves hands-on-experience in organic chemistry. Experiments include basic organic synthesis, alcohol dehydration, hydrocarbon crystallization and purification as well as characterization of organic functional groups.

CHEM260 Analytical Chemistry (3 credits)

This course provides theory and methods associated with gravimetric and volumetric analysis and simple instrumentation. It includes an introduction to statistical evaluations of analytical data. It emphasizes the quantitative determination of substances using spectroscopic analysis, analytical separations, chromatography, and electrochemical methods: potentiometry, voltammetry, and coulometry. Prerequisite: CHEM 200

CHEM260L Analytical Chemistry Lab (1 credit)

This laboratory course stresses the use of methods and instrumental techniques for quantitative chemical analysis.

CHEM300 Organic Chemistry II (3 credits)

This course is the bulk of under graduate organic chemistry. Mechanism in organic chemistry such as SN1, SN2, E1 and E2 and free radical chemistry will be the key focus of this course combined with comprehensive study of structure and reactivity of functional groups: the chemistry of alcohols, phenols, aromatics, ethers, aldehydes, ketones, amines, carboxylic acids, and their derivatives such as esters and amides. The strategic approach for organic chemistry synthesis, structure elucidation, and mechanistic study by spectroscopic methods will also be investigated. Prerequisite: CHEM 250.

CHEM300L Organic Chemistry Lab (2 credits)

Basic experimental techniques in organic chemistry such as melting points, boiling points, distillation, extraction, chromatography; synthesis, separation and purification of some organic compounds. Co-requisites: CHEM 300

CHEM310 Physical Chemistry I (3 credits)

This course will lay the foundations for a sequence of physical chemistry taken by all B.S. chemistry majors and others interested in obtaining a background in elementary theoretical chemistry. It will be taken with thermodynamic and waves (PHYS 250). The sequence is essential for students who plan to do graduate work in chemistry, topics include, an in depth analysis of atomic and molecular structure, the states of matter, phase equilibria, chemical equilibrium and kinetics. Prerequisite: CHEM 200

CHEM310L Physical Chemistry I Lab (1 credit)

The laboratory experiments illustrate physical chemistry principles and their application in the laboratory. Data acquisition, analysis, and report preparation is emphasized. Experiments in molecular weight determination, chemical equilibrium, and physical properties of gases, liquids and solids will be conducted.

CHEM350 Organic Chemistry III (3 credits)

Free radical chemistry and applications, strategic approaches for organic chemistry synthesis, theory and practice of separation and purification of organic compounds, identification of organic compounds and reaction intermediates, structure elucidation and mechanistic study by spectroscopic methods. Prerequisite: CHEM 300

CHEM360 Physical Chemistry II (3 credits)

Topics include: The relationship between cohesion, structure and properties of fluids. Thermodynamics laws, free energy and chemical potentials, gases and dilute solutions, phase transitions, colligative properties, chemical equilibria, ionic solutions, chemical kinetics and transport processes. Prerequisite: CHEM 310.

CHEM370 Inorganic Chemistry I (3 credits)

This course dwells into the structure and bonding energetics and kinetics of inorganic compounds. Topics include a survey of the chemistry of both non-metal and metal elements, group theory, coordination compounds and organometallic compounds. Definitions of diamagnetism, paramagnetism, magnetization and magnetic susceptibility; survey of the properties of the transition metals with emphasis on common oxidation levels, valency, metal-ligand multiple bonding, metal-metal bonds and coordination clusters. Prerequisite: CHEM 200

CHEM370L Inorganic Chemistry I Lab (1 credit)

The laboratory part of this course includes: Preparation of inorganic and organometallic compounds illustrating special and advanced techniques, including characterization by vibrational spectroscopy, electronic absorption spectroscopy and other modern spectroscopic techniques.

CHEM400 Inorganic Chemistry II (3 credits)

This course deals with modern inorganic chemistry from both the descriptive and theoretical points of view. Topics discussed include: molecular geometry and symmetry, crystal- and ligand-field and MO theories, mechanisms and reactions of coordination and organometallic chemistry and the chemistry of a selection of representative elements and transition metals. The importance of inorganic (and particularly transition metals) species in many organic reactions, in biochemical processes, catalytic homogeneous reactions, and high technology materials. Prerequisite: CHEM 370

CHEM410 Structure Determination of Compounds (3 credits)

This course will cover the theory and practice of separation and purification of organic compounds. Identification of organic compounds and reaction intermediates, structure elucidation and mechanistic study by spectroscopic methods. Prerequisite: CHEM 300

CHEM420 Industrial Chemistry (3 credits)

This course will cover a few major topics of the chemical industry: a review of Petrochemicals synthesis and usage, polymer chemistry and technology of large volume polymers: such as polyethylene, polypropylene, polyvinyl chloride and polyethers. Chemistry and technology of some large volume catalytic processes. Prerequisite: CHEM 250 and CHEM 310.

CHEM430 Instrumental Chemistry (3 credits)

After a brief review of the statistical treatment of data, sample preparation techniques, and basic electronics. We then consider the design and operating principles of a wide variety of analytical instruments. The spectroscopic techniques that will be examined include optical, UV-Visible, infra-red, NMR and mass spectrometry. Electrochemical analysis, electrophoresis and chromatography will also be covered. Prerequisite: CHEM 260.

CHEM465 Environmental Chemistry (3 credits)

This course deals with chemical pollutions of the environment. The chemistry of Air, soil and water pollutions will be covered. Topics include: the carbon cycle, VOC's, inorganic wastes, the effect of pollution on drinking water and air quality and some special topics such as acid rain. Prerequisite: CHEM 250.

CHEM490 Modern Topics in Chemistry (2 credits)

This course gives an integrated approach to the synthesis, structure, and function of macromolecular biomolecules, including proteins, carbohydrates, DNA, and RNA. Energetics of catalysis, protein structure and folding, enzyme kinetics and mechanism, protein engineering, and DNA structure and synthesis are also covered. Prerequisite: Senior Standing.

COMM200 Introduction to Communication Studies (3 credits)

This course introduces the students to the general idea of Communication theory and application. The course will involve multidimensional issues of student preparation to other courses in Communication, through this course the student will have the chance to figure out the field of study he/she wants to focus on. Prerequisite(s): ENGL 150

COMM220 Rhetoric & Persuasion (3 credits)

The following course will teach students how to write a speech, and perform public speaking. Through the course, the students will learn how to influence an audience through words, and the history of rhetoric through the ancient eyes of the Greeks and the Romans will be fully covered. Co-requisite(s): COMM 200

COMM255 Theories of Mass Media (3 credits)

This course examines the role of mass media in modern societies and the effects of media institutions and messages on individuals, communities and society. It is an introduction to the social responsibilities of the mass communicator in Lebanon, the Middle East, and the world. An examination of the mass media in terms of the social, political and economic forces which influence and shape them, the development, process, principles and effects of print, PR, advertising, radio, TV, film, satellite and computer assisted communication.

COMM265 Performance Theory & Practice (3 credits)

Students will be introduced to performance theory and in its application along the social norms. Students will learn strategies that would enhance their work performance in a very competent way. Through this course students will be introduced to how to use the language appropriately to avoid biased words, phrases and actions. The course will introduce the students to stereotypes based on gender, race, ethnic group, age, sexual orientation, or disability. Prerequisite(s): COMM 200

COMM300 Media Laws & Ethics (3 credits)

Survey of media law emphasizing regulations as it pertains to television, radio, and print press. News as a distinct form of mass communication, involving social functions and significant questions about facts, truth, knowledge, and values. Prerequisite(s): COMM 200

COMM310 Research Methods in Communication Arts (3 credits)

The course is aimed at teaching students how to conduct a research in communication arts, how to ask questions and find answers for them through systematic procedures from a Social Science perspective on Communication. By the end of this course students should become acquainted with setting a Hypothesis or a theory, setting the objectives of a research, how to conduct a library research to survey bibliography relevant to the research, become familiar with Quantitative and Qualitative Methods, their advantages and shortcomings, and how they complement each others, and finally how to write a research based on the data collected through research.

COMM325 Animation Software (3 credits)

Using a mix of theoretical and practical assignments, students will develop an understanding of the conceptual issues regarding animation while also producing an animation project. Students will create a set of storyboards, a simple animation with images, graphics, sound and special effects, and produce a video on various media, including a Web site. Students are expected to have a basic understanding of computer operating systems and will be expected to learn computer animation software while in the course. The animation software will be determined by the instructor at the time the course is taught.

COMM400 Media Management (3 credits)

The course offers the students the opportunity to get acquainted with the business of media. It allows them to explore the uniqueness of information as a product, shedding the light on two perspective models, namely the market one and that of the public sphere. While the market aims at profits and the public sphere is concerned with public interest, facts, theories and articles related to these issues, are communicated to the students. The objective is to induce them towards a global comprehension of the media industry on the one hand, and on the other, towards an analysis of the media sphere as it presents itself today in their everyday lives, and of the various messages that it conveys.

CSCI200 Introduction to Computers (3 credits)

The course aims at making students competent in computer-related skills. It is supposed to develop basic computer knowledge by providing an overview of the computer hardware and basic components as well as hands-on practice on common software applications such as Word, Excel, Power Point, Internet and Email. The student will learn how to use the new features of Microsoft Office 2010 mainly Word documents, Excel spreadsheets and PowerPoint presentations. On the surface, MS Office 2010 looks a lot different than previous versions (no more menus__toolbars!), but by learning to understand the dramatically changed, Ribbon-based interface, you'll quickly get back on the road to productivity.

CSCI205 Computer Science Overview (3 credits)

This course presents breadth coverage of computer science courses so that students would understand computing and appreciate technology's impact on society. Topics include binary values and number systems; data representation; gates and circuits; computing components; operating systems; file systems and directories; information systems; computer networks; and elementary Programming.

CSCI250 Introduction to Programming (3 credits)

This course introduces the basic concepts and principles of structured programming in Java. It starts by an introduction to Java showing its syntax and the structure of a program in Java then teaches simple data types, control structures, methods, arrays, and strings.

CSCI250L Introduction to Programming Lab (1 credit)

This course is a co-requisite for the Introduction to Programming course (CSCI250). The students apply in the lab the fundamentals of programming, explained in CSCI250, by solving lab exercises. The objective of the lab is to implement programming problems using basic data types, selection and repetition structures, methods and arrays.

CSCI300 Intermediate Programming with Objects (3 credits)

The course emphasizes the principles of Object Oriented Programming using the Java Programming Language. It starts by an introduction to creating applications using Java. Then the course introduces how to define classes and declare objects and discusses the main topics related to object oriented programming (constructors, methods, dependency, aggregation, inheritance, and polymorphism). Finally, the course introduces exception handling as well as writing to and reading from files. The course emphasizes the principles of Object Oriented Programming using the Java Programming Language. It starts by an introduction to creating applications using Java. Then the course introduces how to define classes and declare objects and discusses the main topics related to object oriented programming (constructors, methods, dependency, aggregation, inheritance, and polymorphism). Finally, the course introduces exception handling as well as writing to and reading from files.

CSCI300L Intermediate Programming with Objects Lab (1 credit)

This course is a co-requisite for the Intermediate Programming course (CSCI300). The students implement and practice in the lab the concepts and the programming techniques they learn in CSCI300 by solving lab exercises. The main concepts of Java language as well as the object oriented programming issues are to be discussed and implemented in this module using the NetBeans IDE.

CSCI335 Database Systems (3 credits)

This course introduces fundamentals of database systems. It starts by motivating the need of the database approach in real life scenarios and the benefit of adopting a Database Management System (DBMS). This course includes data modeling (based on the entity relationship model), data normalization and data manipulation SQL queries. Students will learn how to design, implement and query a relational database by using a Microsoft SQL Server DBMS.

CSCI342 Fundamentals of Networking Technologies (3 credits)

The ITN course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the CCNA curriculum.

CSCI345 Digital Logic (3 credits)

The course develops the ability of the student to understand the design of digital electronic circuits which are the main components in digital computers, data communication, digital recording, and so forth. The course covers number

systems, Boolean switching algebra, combinational circuit design, flip-flops, counters, registers, state machine notation, analysis of sequential circuits, and sequential circuit design

CSCI351 Concepts of Programming Languages (3 credits)

The course introduces the main concepts of current programming languages and provides the student with the tools necessary to evaluate existing and future programming languages. It also explains the design of compilers by explaining in depth the programming language structures, describing the syntax in a formal method and introducing approaches to lexical and syntactic analysis.

CSCI361 Introduction to Cryptography (3 credits)

The course teaches the students how to maintain transferred data safety using numerous encryption methods. The student will learn basic types of cryptography such as public key and conventional cryptography. The student will combine constructed cryptographic primitives to build provably secure protocols, such as public-key encryption.

CSCI362 Network Security (3 credits)

The course teaches the policies and practices adopted to monitor and prevent unauthorized access to computers and resources connected to the network. The student will learn how to protect the underlying networking infrastructure from unauthorized access, misuse, malfunction, modification, destruction, and improper disclosure. Protection: The student will learn how to configure the system and networks and to identify when some network traffic encounters a problem and how to respond to them and return to a safe state as rapidly as possible

CSCI371 Knowledge Representation & Reasoning (3 credits)

Knowledge representation and reasoning is one of the main areas of artificial intelligence. It represents information about the world in a form that a computer system can use to make intelligent decisions based on the encoded knowledge. The student learns the general architectures for knowledge representation such as semantic nets, systems architecture, frames, rules, and ontologies. The student will also learn how to automate various kinds of reasoning such as inference engines, and classifiers

CSCI372 Natural Language Processing (3 credits)

This course describes a variety of ways to represent human languages as computational systems. The student will learn the interactions between computers and human languages and write programs to deal with text and speech data like translation, summarization, extracting information, question answering, natural interfaces to databases, and conversational agents. Computational treatments of words, sounds, sentences, meanings, and conversations are also covered.

CSCI373 Robotics Design & Coding (3 credits)

This course introduces the basic concepts and principles for using the Arduino microcontroller platform as an instrument to teach students about topics in electronics, programming, and human-computer interaction. Students will be able to build useful devices. Half of the in-class time is entirely devoted to developing, debugging, and refining projects where each session will have a period to solve a problem by the instructor and a period dedicated to the students to practice on a similar problem. At the end of the semester, pairs of students will prepare a final project.

CSCI375 Web Programming Client Side (3 credits)

This course presents students with the principles necessary to design and develop client-side scripts used to build dynamic websites and applications using JavaScript/ECMAScript 5 and 6 and Typescript, JQuery (a JavaScript library), JSON (a JavaScript-friendly data format), JavaScript as the J in AJAX, and JavaScript in HTML5 form interaction and validation, and modern web frameworks and component-based libraries such as Angular for efficiently developing modular web page components

CSCI378 Data Structures and Algorithms (3 credits)

This course covers the design and implementation of important data structures and their algorithms. The data structures considered include stacks, queues, lists, linked lists, trees, and graphs. Students will also learn basic to fundamental algorithms for solving problems and how to compute the time complexity of algorithms and will focus on general design and analysis techniques that lie beneath these algorithms.

CSCI380 Software Engineering (3 credits)

This course provides an understanding of the system development process which links user requirements to the computer based system. This course emphasizes problem formulating and problem solving. Students will learn how to analyze a problem domain and develop the appropriate analysis and design models to formalize the requirements using object oriented methods and appropriate theory.

CSCI390 Web Programming (3 credits)

The course investigates various techniques used for designing web pages. Presenting the basics of static web page design using HTML. Dynamic web page design using JavaScript. Introduces the server side scripting languages such as : ASP and PHP4. Prerequisite(s): CSCI 300

CSCI392 Computer Networks (3 credits)

The Routing and Switching Essentials course describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality.

CSCI410 Mobile Application (3 credits)

Today's applications are increasingly mobile. Computers are no longer confined to desks and laps but instead live in our pockets and hands. This course teaches students how to build mobile apps for Android, Students learn to write both web apps and native apps for Android using Eclipse and the Android SDK. The goal of this course is to teach students how to design, implement, test, debug and publish smartphone applications on java based android phones. Students will learn how to take their innovative ideas from conception to the android market through a series of rigorous hands-on programming assignments and group project. This is an introductory course aimed at undergraduate students who have Java programming experience. However, there is a significant amount of programming in this course requiring a commitment on the part of the student.

CSCI412 Application Software Security (3 credits)

The course teaches the student how to prevent, detect, and correct security weaknesses of all in-house developed and acquired software. This is done at different stages of the lifecycle of an application such as design, development, deployment, upgrade, and maintenance. The student should learn how to establish secure coding practices appropriate to the programming language and development environment and how to apply analytical tools to verify that secure coding practices are being followed.

CSCI426 Web Programming Advanced (3 credits)

This course teaches Server Side Scripting technologies that allow the creation of complex Web applications to generate Web pages dynamically. We seek an advanced mastery of web-development techniques that use databases to create content—HTML form objects, database connections, and server-side programming. We use open-source MySQL as a database, structured query language (SQL), and PHP5 for programming, __ASP.NET with C# as code behind and SQL.NET for managing the database.

CSCI427 Application Development (3 credits)

This course teaches the students how to develop commercial applications using C# programming language. The course starts with Object Oriented Programming concepts in addition to advanced topics related to database connectivity using ADO 2.0 objects. The second part introduces topics related to building WPF applications. The final part covers networking where student should be able to implement a simple client/server application.

CSCI430 Operating Systems (3 credits)

Fundamental overview of operating systems. First Quarter: Operating system structures, processes, process synchronization, deadlocks, CPU scheduling, memory management, file systems, secondary storage management. Requires substantial programming projects. Prerequisites: High Junior Standing or instructor's consent.

CSCI430L Operating Systems Lab (1 credit)

This course is a co-requisite for the Operating System course. The students apply in the lab all concepts they learn in the Operating System course by solving lab exercises, and preparing several projects. The concepts include a fundamental practice of Linux OS and the basics related to process management discussed in the course sessions. These basics include process creation and termination, process communication, and process synchronization using semaphores. The students will be able to practice all of these concepts by developing, debugging, and testing programs under one of the Unix/Linux distributions.

CSCI435 Computer Architecture (3 credits)

The course describes the organization and architecture of computer systems; considerable differences in performance and functionality of a computer are due to its internal structure and organization. Students will understand exactly how a computer functions by writing programs in a common assembly language

CSCI441 Machine Learning (3 credits)

The course provides a comprehensive introduction to the principles, techniques, and applications of Machine Learning. The student will learn supervised, unsupervised, and reinforcement learning techniques. The course also covers other recent developments such as probabilistic graphical models, deterministic inference methods, and emphasizes modern Bayesian perspective.

CSCI443 Game Development (3 credits)

This course is an introduction to game programming. In this course, the student will understand what defines a “game” and the mechanics and rules behind different types of games. The student learns the tools and practices of game development and gets started developing videogames using the standard game development tools, including the Unity3D game engine and C#. At the end of the course, the student will have completed three hands-on projects and will be able to leverage an array of game development techniques to create basic games.

CSCI445 Robotics Design and Coding (3 credits)

The course is designed to provide computer science students a developed concept in coding, in which the use of hardware is optimized to guarantee tangible learning skills. Students will be able to use sensors and motors to achieve a certain task, understand development procedures in robotics, work in groups, develop specific robotic solutions by the end of each session as part of the project based approach used in this classroom, understand the connection between hardware and software in robots and finally fully grasp the sense, plan, and act, essential to have in any automated solution. Students will explore the Arduino Board and the IDE, Learn about Electricity and Electronic Components, work with Resistors, Resistances, Power Rating, Light-Emitting Diodes, Solderless Breadboard, Pulse-Width Modulation, Transistors, Relays, Capacitors, Push Buttons, Reference Voltages, Piezo Buzzers, Temperature Sensors, Shift Registers and LED displays.

CSCI450 Theory of Computation (3 credits)

This course introduces such theoretical aspects of computing as models of computation, inherent limits on computation, and feasible computation. Topics include regular languages, finite and pushdown automata, context-free languages, Turing machines, and computational complexity. The course also introduces computable functions, insolvability of the halting problem and related problems, and the classes P and NP.

CSCI451 Parallel Processing (3 credits)

Students learn the fundamental concepts of parallel programming by using multiple processors at the same time to make the applications run faster. The student should be able to write parallel programs for a wide range of multicore platforms and learn their theoretical foundations including, determinism, shared vs. non-shared memory, implicit vs. explicit parallelism, synchronization mechanisms such as locking, atomicity, transactions and barriers, parallel programming models such as threads, MapReduce, Apache Spark and SIMT.

CSCI471 Deep Learning (3 credits)

The course teaches the foundations of deep learning, which is a subset of machine learning. Students learn how to build neural networks, and the chain of transformations from input to output using some layers through which the data is transformed. Students will learn, in addition to artificial neural networks, convolutional neural networks, and recurrent neural networks.

CSCI475 Artificial Intelligence (3 credits)

The course introduces the principles of non-algorithmic problem solving based on heuristics. The course explores two approaches that examine problems that could not be solved with algorithms: the Search-Based approaches and the Knowledge-Based approaches. At the end of the course the students will acquire a good knowledge about how to solve problems using heuristics and deductive reasoning techniques based on Propositional Logic and First Order Logic. The course introduces also an inference motor (tool) named PROLOG that assists to implement and test deductive inference techniques in the First Order Logic.

CSCI490 Information System Development (3 credits)

Information systems development is a legitimate engineering discipline. Software process models, software engineering methods, and software tools have been adopted successfully across a broad spectrum of industry applications. Effective development of an information system depends on proper utilization of a broad range of information technology, including database management systems, operating systems, computer systems, and telecommunications networks. This course covers the phases from physical system design through the installation of working information systems; Concentrates on using the results of systems analysis and design, typically documented in CASE technology, and either building or generating systems to meet these specifications. The course is a semester-long field project with various hands-on exercises that provide practical experience in building, testing, and installing a system.

CSCI510 Design and Analysis of Algorithm (3 credits)

The aim of the course is to provide the students with more understanding of algorithms, data structures and time complexity. The course concentrates on the fundamental and advanced techniques used to design and analyze efficient algorithms including greedy algorithms, divide and conquer dynamic algorithms, graph techniques, probabilistic algorithms and parallel algorithms. The design techniques employed are illustrated and presented using real-life applications

CSCI511 Distributed Operating Systems (3 credits)

To provide an in-depth examination of the principles of distributed systems in general and to understand the fundamental concepts and design principles of a technology that is growing as one of the newest areas in computer science. Students will understand the fundamental concepts of distributed operating system components. A set of case studies are presented to the students to provide real-world insights into four distributed operating systems.

CSCI512 Information Retrieval (3 credits)

To enable students to understand web search engines and research retrieval engines. This course examines the functional components of information retrieval including document and query representation, indexing techniques, similarity and matching, retrieval models, evaluation techniques, implementation issues, query reformulation (relevance feedback), Space models and space reduction. We will look both at web search engines and a research retrieval engine. Students will develop projects in some area of information retrieval.

CSCI513 Advanced Database Systems (3 credits)

This course presents advanced concepts in database systems. First, we present a quick overview of relational DBMS. Second, we will discuss advanced data management concepts (PL/SQL, control structures, cursors, triggers,). Then, we will discuss fundamental notions of distributed database design (e.g. global directory issues, query processing) in large scale environment (e.g. Grid and Peer-to-Peer). We will focus on the very hot problem of query optimization by discussing the current approaches in this field. Finally, we will present the main concepts for transaction, concurrency control and database recovery techniques.

CSCI514 Advanced Computer Networks (3 credits)

To provide more understanding of technologies that makes the Internet work. A clear discussion of fundamentals with the latest technologies is given with a new focus on CIDR addressing, Routing Architecture, Routing between Peers, and Routing within an Autonomous System. Students will learn also Internet Multicasting, IP Switching and MPLS in addition to the new technologies used in the networking such as Mobile IP

CSCI515 Computer Ethics (3 credits)

To teach students about social, legal, philosophical, political, constitutional, and economical issues related to computers and to prepare students for careers in computer science and other fields who are interested in issues that arise from computer technology. The course focuses on ethical issues that student might face directly as a computer professional, in addition to social, political, and legal issues related to computers. Students are required to prepare a term paper and oral presentations. Many exercises are to be discussed in class.

CSCI521 Machine Learning (3 credits)

The course provides a comprehensive introduction to the fields of pattern recognition and machine learning. The two fields are two aspects of the advanced Artificial Intelligence topics , and have recently undergone considerable development and applications . The course assumes no previous knowledge of pattern recognition or machine learning concepts but knowledge of multivariate calculus and basic linear algebra and some familiarity with probabilities. The course will consist of readings from the text and handouts, classroom lectures, papers and publications, discussions and projects to provide an opportunity for the student to apply the learned material. The course covers recent developments such as probabilistic graphical models, supervised and unsupervised learning techniques, deterministic inference methods, and emphasizes of modern Bayesian perspective.

CSCI595 Special Graduate Skills (1 credit)

The aim of the course is to master technical writing for proposals, technical presentations, Students will learn how to clearly communicate technical ideas to any audience—technical or nontechnical—and motivate them to act. The course will go over many examples plus instructions for writing exactly the kinds of documents needed

CSCI598 Project (3 credits)

The course enables students to develop and implement a project. The student will learn how to organize the project in a timely way so that it will meet the expected deadlines and be able to submit projects prepared according to professionally accepted standards.

CSCI599 Scientific Research (3 credits)

The course is a continuation of the CSCI598 Project. The aim of the course is to conduct researches connected to some of the areas within Computer Science. Students should coordinate with a supervisor at the university to select the subject. The student conduct a literature review in the area of study, state the hypothesis, conduct a literature review and confirm originality, prepare the system design and coding, set the experimental design and coding, conduct the experiments, prepare the experimental analysis and finally submit a thesis and present orally the research to a committee in an official seminar. The committee might suggest changes and improvements on the research. the research. The research process is carried under the supervisor direction.

CSCI625 Mobile Systems and Applications (3 credits)

Mobile Systems and Applications

CSCI631 Fundamentals of Robotics (3 credits)

This course encompasses the fundamentals of perception, sensors, computer vision, navigation, localization, actuation, manipulation, mobility (e.g., walk, swim, roll, crawl, fly), and intelligence (e.g., control, planning, and mission execution).

CSCI632 Bioinformatics (3 credits)

This course is an interdisciplinary and hands-on approach to the topics of bioinformatics and proteomics. The lectures and lab sessions cover sequence analysis, microarray expression analysis, Bayesian methods, control theory, scale-free networks, and biotechnology applications. It will include current real-world examples, actual implementations, and computational design issues. Where applicable, technical issues from signal processing, network theory, machine learning, robotics and other domains will be discussed. New research areas using current literature will be explored. Guest lecturers from industry and academia might be invited.

CSCI633 Image Processing (3 credits)

Over the last ten years, Image Processing has become a popular area of research in computer vision and one of the most successful applications of image analysis and understanding. Because of the nature of the problem, not only computer science researchers are interested in it, but neuroscientists and psychologists also. This course provides a comprehensive overview to image capture, representation and processing as well as the human visual system. The course further introduces the student to the tools required to perform state of the art image processing, namely MATLAB.

CSCI634 Mathematics for Computer Science (3 credits)

The course focuses on subjects in mathematics that are relevant to computer science students mainly proofs, graphs, counting and probabilities. Students will develop a profound understanding of the mathematical foundations of their subject, and will learn how to use programming languages to solve mathematical problems. The course covers Propositions, Patterns of Proof, Induction, Number Theory, Graph Theory, Directed Graphs, Relations and Partial Orders, State Machines, Sums and Asymptotic, Recurrences, Cardinality Rules, Generating Functions, Infinite Sets, Events and Probability Spaces, Conditional Probability, Independence, Random Variables and Distributions, Expectation, Deviations and Random Walks.

CSIT320 Microcomputer Support (3 credits)

Micro Computer Support curriculum provides an introduction to the computer hardware and software skills needed to help meet the growing demand for entry-level ICT professionals. The curriculum covers the fundamentals of PC computer technology, networking, and security, and also provides an introduction to advanced concepts. Micro Computer Support is a hands-on, career-oriented e-learning solution with an emphasis on practical experience to help students develop fundamental computer skills, along with essential career skills. Micro Computer Support curriculum helps students prepare for entry-level ICT career opportunities and the CompTIA A+ certification, which helps students differentiate themselves in the marketplace to advance their careers.

CSIT381 Microcomputer Support (3 credits)

Micro Computer Support curriculum provides an introduction to the computer hardware and software skills needed to help meet the growing demand for entry-level ICT professionals. The curriculum covers the fundamentals of PC computer technology, networking, and security, and also provides an introduction to advanced concepts. Micro Computer Support is a hands-on, career-oriented e-learning solution with an emphasis on practical experience to help students develop fundamental computer skills, along with essential career skills. Micro Computer Support curriculum helps students prepare for entry-level ICT career opportunities and the CompTIA A+ certification, which helps students differentiate themselves in the marketplace to advance their careers.

CSIT415 System and Network Administration (3 credits)

This three credit course will introduce the student to the basic concepts required from every Network and system administrator. These concepts include but are not limited to the installation of multiple operation systems, configuring computer networks and the administration of users and groups. The administration and configuration of core networking services such as DNS and Firewalls will also be discussed.

CSIT430 Internetworking and Routing Protocols (3 credits)

The Routing and Switching Essentials course describes the architecture, components, and operations of routers and switches in larger and more complex networks. Students learn how to configure routers and switches for advanced functionality.

CSIT480 Interconnecting Networks (3 credits)

The lectures focus on presenting the concepts, commands, and practices required to deal with Cisco switches and routers to operate in corporate internetworks through the following structure: 1-Build LANs and understand overcoming

problems associated with Layer 2 switching 2-Evaluate the differences between link-state and distance vector routing protocols 3-Configure and troubleshoot OSPF in a single area

CSIT481 System Architecture & Integration (3 credits)

This course teaches the integration of information systems in organizations. The student should learn the process by which different computing systems and software applications are linked together physically__functionally. Students develop project plans and study the influence of business processes and culture on system architecture decisions.

CSIT482 Human-Computer Interaction (3 credits)

The course teaches how to build good interfaces and explains the design and evaluation of effective user interaction designs, including principles and guidelines for designing interactive systems. Students should be able to explain why certain designs work better in particular circumstances and to design better interfaces from the start by knowing human limitations and easing the load on the user.

FDSC300 Technology of Food Products (3 credits)

Introduction to the different technologies involved in food production from raw materials to the end product. Application of biotechnology to the production of raw materials, as well as to the production, processing, storage, packaging, preparation of food products is briefly discussed. Different chemical, microbiological, and physical changes that occur to food are introduced. Prerequisites: ENGL 150

FDSC300L Technology of Food Products Lab (1 credit)

Application of laboratory methods to the chemical, physical, instrumental, and sensory analytical techniques in the analysis of nutrients and chemicals in Foods. The course covers the use of spectrophotometry, visible UV, IR, Chromatography (HPLC, GLC), and mechanical texture analysis.

FDSC355 Food Microbiology II (3 credits)

Microbiological aspect of food preservation; beneficial utilization of microorganism in food applications; detection of microbial contamination and hazards of important public health. Prerequisite: FDSC 345

FDSC355L Food Microbiology II Lab (1 credit)

In this course the students learn how to conduct experiments to determine the Decimal reduction time and Z-value which are essential to calculate the total death time and thus affecting the total production time. Furthermore, they would learn how to test the local food products for microbiological hazards.

FDSC360 Crop production attributes to quality (3 credits)

This course discusses the crop production system and practices, in agronomy and horticulture, and how this affects the quality attributes set by the food industry.

FDSC365 Animal production attributes to quality (3 credits)

This course discusses the different animal production systems and practices, in aquaculture, poultry, dairy and beef production, and how this affects the quality attributes set by the food industry.

FDSC370 Food Chemistry (3 credits)

Chemical composition of food. Structure and physical properties of food component, including water, carbohydrates, protein, lipids other nutrients, and food additives. Chemistry of changes occurring during processing, storage, and utilization. Prerequisites: BIOC 300

FDSC415 Dairy Technology (3 credits)

Basic principal of food quality control, quality assurance, and quality management in food service establishments and food industries; emphasis on modern concepts such as HACCP, ISO 9000 and Good Manufacturing practices. Prerequisite: FDSC 300

FDSC420 Food Processing (3 credits)

Industrial methods to prepare and preserve food are studied. It provides the students with different methods for food preservation and technology to improve chemical and physical properties of raw food. The effect of food processing on nutritional value, microbiological safety, chemical and physical qualities of food is discussed. It includes traditional basic food technology (drying, fermentation and pickling), thermal treatments (pasteurization, sterilization, canning, cooling, freezing, and dehydration), irradiation, and microwave technology. Field trips to food plants to see the different procedures are recommended. Prerequisites: FDSC 300, FDSC370

FDSC425L Food Processing Lab (1 credit)

This course involves laboratory exercises in food preservation and processing. Field trips to food plants to see the different procedures will be organized.

FDSC435 Food Toxicants and Additives (3 credits)

A study of natural & man-made toxicants and the hazards they cause to human health. A survey of additives that are used in food preparation with emphasis on their impact on human health and regulation policies on their use. Pre-requisite(s): FDSC 370

FDSC445 Food Quality management and HACCP (3 credits)

A study of HACCP principles, CCP verification, HACCP plan validation and HACCP regulatory requirements. Prerequisite(s): Advisor's Approval

FDSC455 Meat, Fish and Poultry Technology (3 credits)

The chemistry, technology, and processing of meats, poultry, milk and milk products. Pre-requisite(s): FDSC455

FDSC460 Food Service Management (3 credits)

It discusses techniques of management of functional operation of food service: Purchasing, budgets, and control management. It will focus on the development of small and large scale cooking skills, menu planning and standard recipe manipulation in keeping with dietary modifications. It will also develop the necessary skills and knowledge base to assist in and manage the provision of meals via an institutional food service. Aspects of organizational design, leadership, motivation, negotiation, resource management, marketing, production, safety and sanitation issues are discussed. Prerequisites: Management of organizations (Principles of management, introduction to management), NUTR 250, BMGT200

FDSC475 Food Engineering (3 credits)

Basic concepts and principals of food engineering and their applications; focus in engineering design and analysis of unit operations common to food processing. Prerequisite: FDSC 300

FDSC495 Project in Food Science (3 credits)

The main purpose of the project to demonstrate the student's ability to make independent use of information and training and to finish objective evidence of constructive powers in a chosen field. Students must present a thesis that must show familiarity with previous work in the field and must demonstrate ability to carry out research and to discuss results and conclusions. Pre-requisite(s): Senior Standing

FDSC498 Supervised Training in Food Industries (1 credit)

A supervised student training in one or more food establishments or industries covering the food production, safety, and quality aspects.

FDSC500 Biometrics and risk assessment (4 credits)

This course discusses statistical principles and methods as applied to data collected in food science and technology. The course focuses on experimental design, quantitative and qualitative analysis of data, statistical inferences and their applications in food sciences and risk assessment

FDSC510 Physiochemical aspect of foods (3 credits)

Explanation of physical and chemical interactions between various constituents resulting from processing operations often lead to physical, sensory, and nutritional changes in foods. It also combines important information on processing and food quality. This course describes the effects of various processing technologies on quality changes of different major foods in an integrative manner

FDSC520 Advanced Food Engineering (4 credits)

This course discusses the modeling, design and simulation of the most important food processes mainly the heat and mass transfer processes. This is done by explaining the fundamental engineering and economics relationships, and literature data of physical and transport properties of food.

FDSC530 Advanced dairy processing (3 credits)

This course covers key aspects of safety and quality. It discusses current knowledge about the major constituents of milk. Furthermore, it discusses how factors such as breed and husbandry practices on the farm influence milk composition and how they interact with hygienic practices on the farm, developments in pasteurization and sterilization technologies whilst retaining milk quality. Other key aspects of dairy product quality, such as flavor in milk and other dairy products, improving texture in fermented dairy products, controlling stability and shelf-life, and testing the authenticity of milk and milk products are discussed.

FDSC535 Chocolate and its products (3 credits)

This course covers concepts in chocolate production such as latent heat, relative humidity etc. It involves also discussion of numerous unit operations and a fundamental understanding of momentum, and processes relevant to chocolate and confectionary science. It discusses concepts such as conching, dutching, caramelization, etc.

FDSC540 Food Additives: Practical Applications (3 credits)

This course discusses practical information of acidulants, antioxidants, colorings, etc. It provides useful information for the practicing food technologists and students. It also provides information about the relation between food additives and food products in terms of usage, application and quality. In addition it discusses chemical and physical data and legislation.

FDSC545 Food Analysis (3 credits)

The ability to accurately separate, identify, and analyze nutrients, additives, and toxicological compounds found in food and food products has become critically important in recent decades. This requires training students and analysts on the proper application of the best methods, as well as improving, developing, or adapting existing methods to meet specific analytic needs. This course also will cover the aspects of standardizing laboratory methods and applications for quality control.

FDSC550 Food packaging (3 credits)

This course discusses food packaging taking into consideration the biochemical, chemical, physical, and biological changes that occur during processing, distribution, and storage. Special stress would be on specific food products and on defining the indices of failure for some types of food such as milk, fruits, bottled water, juices, vegetables, fish, and beef. It discusses the deteriorative reactions for each food and reviews how different packaging materials may influence time to failure and thus shelf life.

FDSC555 product innovation and development (3 credits)

The course begins with simple principles of concepts, moves forward to methods for testing concepts, and then moves onto more substantive areas such as establishing validity, creating databases, and statistical methods for concept testing.

FDSC560 Fruits and their products (3 credits)

This course covers the processing of fruits from four perspectives: scientific basis; manufacturing and engineering principles; production techniques; and processing of individual fruits.

FDSC565 Grains and Baking (3 credits)

The students would study flour quality which is affected by the grain genotype, growing environment, and processing. They should understand how the genotype and growing environment determine the amount and characteristics of the grain components, including proteins, carbohydrates, and lipids. Furthermore they would know the effect of milling and post milling on quality characteristics involved in baking. The students should be able to use Quality testing valuable information to improve Baking

FDSC570 Nuts and roasting (3 credits)

It covers methods used in the nut industry. This course covers the different roasting methods and quality standards. Furthermore, it covers the chemical and, physical factors which would affect the flavor development, grading, shelf life and safety of end products.

FDSC575 Oil production (3 credits)

This course discusses the processing technologies employed for production of fats and oils, and associated components, to make them shelf-stable with acceptable sensory characteristics and flavor. It also covers secondary processing technologies for production of specific products and important considerations in this area.

FDSC580 Quality aspects of meat fish and poultry (3 credits)

In this course the quality of a food based on meat, fish and poultry will be discussed from two perspectives- scientific status and consumer preferences. For each of these food products, the course will cover factors affecting the quality such additives, aroma, color, contaminants, flavors, microbiology, moisture, mouth feel, nutrition, packaging, safety, sensory attributes, shelf-life, stability, tainting, texture, and water-activity. This will cover these fresh, frozen, or processed food products.

FDSC585 Waste treatment in the food industry (3 credits)

This course highlights major food processing plants or installations that have significant effects on the environment. The topics covered include dairies, seafood processing plants, olive oil manufacturing factories, potato processing plants, soft drink production plants, bakeries, and various other food processing facilities

FDSC590 Advanced topics in Food biotechnology (3 credits)

This course will cover a selection of topics ranging from the molecular basis of food preservation and biotechnology to industrial applications. It will also cover the genetic engineering aspects in developing genetically modified food s and related biosafety issues.

FDSC595 Sensory Evaluation of Food (3 credits)

This course will introduce students to academic skills concerning preparing and writing proposals, projects, grants, thesis and articles.

FDSC596 Graduate Seminar (1 credit)

Student will select, prepare and present a recent topic in food science and technology as well as attending and discussing other students' seminars.

FDSC597 Project (3 credits)

An independent study supervised by a faculty member and a final comprehensive scientific report must be submitted.

GDES300 Typography I (3 credits)

.This theory and studio course will introduce the history, principles and techniques of typography in the graphic design field. In this course, students will explore typography as a form of visual communication. The study areas include typeface classifications and sizes, letter spacing, line spacing, column, structures, and grid systems. Students begin manipulating type forms using traditional materials and computer technology.

GDES315 History of Graphic Design (3 credits)

Since the beginning of time, art has been present in every culture and in different forms. Learning the history of graphic design is a way to understand how and why this major is related visually, ethically, socially and aesthetically to all that surrounds it. It is a relative notion which links past, present and future. History is made at every moment. Learning it is as important as making it. In this course, students are introduced to the creative designers and innovators (regional and international) who helped shaping graphic design into its actual state; giving it thus, in every generation, a new meaning and style. Students are encouraged to research such evolution in the field, prepare presentations related to given lectures, watch design documentaries, participate in discussions, share their ideologies and views-all in the purpose to create richer personas. Prerequisite: Engl151

GDES345 Graphic Design Studio I (4 credits)

This course introduces the visual elements, principles and problem solving methodology, as well as techniques of illustration by learning and developing skills and techniques of different illustration styles for advertising and products in various mediums for graphic design. Students apply a wide range of techniques including color use, typography, composition and layout of a logo whether single or multi-page design in two-dimensional form. It covers the identification, understanding and employment of visuals as controllable communication tools. Students will be introduced to methodological and research practices for designers. Prerequisite: GDES270 – ARTS320.

GDES350 Typography II & Art of Calligraphy (3 credits)

This course introduces students to the principles of Microcontroller design and applications. Students will be introduced to the PIC microcontroller architecture, specifically the PIC 18F family. Moreover, the course introduces programming using assembly language and C. Topics introduced will include: Looping, branching, arithmetic and logical operations, timer, interrupts, Parallel I/O

GDES365 Illustration II - Story Board (3 credits)

It is a continuation of Illustration I with a study in depth about the visual elements illustrated in various methods and mediums. It's as well the visualization of human thoughts and ideas by drawing several sketches inside frames on paper using different techniques and color, and a lot of special effects. Prerequisite: GDES 310

GDES370 Graphic Design Software II (3 credits)

In this course students will be introduced to the Quark Xpress and Page Maker software package. This software is becoming the choice of many of today's leading graphic design and desktop publishing firms. This program allows the designer to merge graphics and text in a variety of sophisticated ways. In the first half of the course student will learn the strength of this software, which allows it to handle precise typographic refinements. The second half of the course covers the more complex commands utilized in the production of more advanced documents. It will also cover the Layout and Page Design of any printed document: News Paper – Magazine – Brochures. Prerequisite: GDES 320

GDES394 Graphic Design Studio II (4 credits)

In this course, student utilizes both traditional and computer means in an advanced manner that explores more complex design problems such as corporate identity, poster design, info graphics and magazine designs. Students learn the discipline, function and tradition of typography as it relates to visual/ verbal communication. Topics include communication, legibility/readability, language sequence and information hierarchy. Students will learn the study of problem-solving as well as the methodology of design thinking. Prerequisite: GDES345 – GDES300

GDES395 Character Design (3 credits)

Character design is an exploration of the various forms of drawing related to the field of animation. Direct drawing of the human figure from models, drawing a variety of animals from live observation, and development of layout drawing used for background painting, Emphasis on volume, mass, weight, movement/gesture, conveying attitude, dramatic expression, action poses, acting, anatomy, consistent perspective and economy of line. Prerequisite: GDES345.

GDES415 Creative Advertising (3 credits)

GDES415, Creative Advertising, students are exposed to a higher-learning in the field of advertising. They engage in more challenging projects, which necessitates effective and creative solutions while utilizing all media including poster (billboard/unipole), print (newspaper/magazine), television, radio, digital (e-banners), and guerrilla. Students review the history of advertising which provides them with real experience of the advertising industry since the 20th century till today.

GDES420 Web Page Design (3 credits)

In this course students will have the opportunity to work as individuals and in teams on long – term projects exploring web page architecture and design. Emphasis is placed on conceptualization and interactivity. Projects are tested on both Macintosh and PC platforms. New advances in web technology are presented. Software packages include: Macromedia Dreamweaver and Macromedia Flash to Web Design software, which includes: Rollover & Animation. Prerequisite: GDES 370.

GDES440 Packaging (3 credits)

An advanced exploration of Typography as an expressive and functional technique. In this course students analyze and develop relationships between image, typography, sequence and hierarchy in the completion of graphic design projects and how to achieve it in three-dimensional projects such as packaging. Content should include basic concept rendering, developing die-cut patterns, model making and mock-up techniques, in both visual and verbal presentation skills. The course includes visits to package design and printing facilities to learn the printing techniques. Prerequisite: GDES 300.

GDES445 Graphic Design Studio III (4 credits)

This is a highly advanced graphic design studio course where students conduct a full campaign of a real life project using all the techniques, methods, and media to present his/her ideas. This campaign should include web page, animation, brochures, printed materials, posters, etc. All presentations should be computer generated. The student in this studio course should present this project in a portfolio setup. The course will be a goal directed graphic design problem solving with emphasis on methods of thinking and research. The course stresses the integration of theory and practice approaches in addition to practical applications while sharpening both conceptual and computer skills. Prerequisite: GDES394, GDES350.

GDES480 Professional Practice (2 credits)

The topic of this course is “Real World” scenarios (etiquette, interviews, business deals, business contract, billing etc.). Students are required to prepare and develop a personal corporate identity (stationery suite, paper catalog and promotional item) along with a professional portfolio, which are essential keys to launch a professional career in the graphic design field. Prerequisite: GDES345.

GDES495 Graphic Design Senior Project (4 credits)

The final stage in graphic design field, where students have to present a final project covering all materials learned by showing a high level of performance in graphic design. Prerequisite: Senior Standing.

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IDES300 Architectural Drawing (3 credits)

Students in this course will be introduced to the manual design/architectural tools, as well as the method in drawing plans, elevations, sections, details such as doors and window. This course will cover the techniques of ink. The student should learn the skills necessary to produce a basic set of drawings for an interior design installation. Prerequisite: ARTS 205.

IDES310 Materials - Techniques and Building Codes (3 credits)

Students will study the visual qualities, technical characteristics, and applications of the common materials and finishes used in interior installations. These materials will include floor coverings, wall coverings textiles, ceiling and sustainable materials. Class material will be presented in the form of lectures, field trips to construction sites should be arranged to witness real life projects. Students will learn the Local building codes, they will learn how to select and specify materials and finishes for the appropriate applications. Prerequisite: IDES 300.

IDES320 Placemaking (3 credits)

As a people-centered approach, PLACEMAKING capitalizes on a local community's assets, inspiration and potential, creating good public spaces that promote people's health, happiness and economic well-being. The course will be linked to a practical field work in a specific neighborhood where students can test the tools provided during the course to support improving public space provision through community involvement while collaborating with local actors. The targeted neighborhood will be preferable located next to the University which can highlight its involvement in the social responsibility within the area. The course aims to help students understand approach, mobilize and involve the community through practical learning. The course can be multidisciplinary and registered by, landscaping, social sciences, and engineering, architecture and public health students.

IDES330 CAD I (3 credits)

This is an introduction to computer graphics and CAD software. Basic practice on 2-Dimensional architectural draw is issued through the term. Students are able to work their designs on computer software after having the skills of manual drafting. Prerequisite: CSCI 200

IDES345 Interior Design Studio I (4 credits)

This course is an introduction to interior design with its different fields: residential, commercial, corporate, hospitality, industrial, and set design. Projects given should be of a small scale each covering a different field. At this level, student will be concentrating on basic interior design technical details such as: technical codes and norms, dimensions, standards and ergonomics. Prerequisite: IDES300, ARTS320

IDES360 Lighting and HVAC (3 credits)

A full study, of the lighting system design and setup, and the different sources of light, and their application, distribution, categories and their graphic representations (symbols) on floor plans. It will also cover the acoustical system and soundproofing. Heating ventilation and air conditioning system and their installation, design consideration, building regulations and needs. Introduction as well to the sanitary system. Plumbing for kitchens and bathrooms and hot water systems. Prerequisite: IDES 300.

IDES370 Furniture History and Design (3 credits)

In this course students will learn the history of furniture and they will be introduced to the design process as it applies to furniture, addressing furniture ergonomics, materials, construction techniques, manufacturing and design. Students will research selected topics, and design seating, work/service pieces and cabinetry. Emphasis will be placed on furniture precedents, research, design process, human factors, accessibility, detailing, documentation, and presentation techniques.

IDES380 CAD II (3 credits)

A detailed study will be held on three-dimensional computer graphics. Students will be able to express their drawings in a 3-Dimensional form. They will also be introduced to rendering techniques and presentation through computer software. All techniques and methods in computer applications will be studied throughout the term. Prerequisite: IDES 330.

IDES394 Interior Design Studio II (4 credits) (To add)

In this course students will explore new concepts and ideas throughout the design and style history that will impact their different design approaches. They will be introduced to the world of industrial design and furniture, as they are required to research and select furniture and accessories for their projects from different sources. The work for each project will be divided into two parts:

1st - Students will discuss and present concepts and theories, research is required for determining best solutions.

2nd -They will study the space and design it having in mind the functionality, utilization and limitation of the given space.

In this course students should be given at least 2 full detailed projects and they are required to design the architecture of one of them, and implement a chosen style on the other. Prerequisite: IDES345- IDES330

IDES395 Autodesk Maya & Adobe Photoshop (3 credits)

This course introduces students to two leading programs: Autodesk Maya & Adobe Photoshop. Adobe Photoshop, or simply Photoshop, is a graphics editing program developed and published by Adobe Systems. It is the current and primary market leader for commercial bitmap and image manipulation. Interior design students can use this program for rendering and presentations. This course will cover various types of photo-manipulation, and a wide variety of output options. Autodesk Maya software is a powerful integrated 3D modeling, animation, visual effects, and rendering solution that enables designers to realize a creative vision for all design projects. In this program, Interior Design Students will learn the techniques of modeling, rendering, texturing and animation producing any visual effect required. Prerequisite: IDES330 & IDES340

IDES400 Architectural Modeling (3 credits)

This course introduces students to the planning and building of different types of models used for interior and exterior architecture. Students should learn all aspects of materials used in the construction of models, with hand on colors and glazing. Instructors will help students exploring their ability in presenting their work in three -dimension. Co-requisite: IDES 380.

IDES410 History of Architects (3 credits)

Master architects from around the world and across history, their work styles and approach to design.

IDES420 Landscape Design (3 credits)

In this course students will learn about the environmental relationships with respect to space scale form, material, and movement. A main focus will be as well on the design of exterior landscape and space, from small gardens to outdoors settings. Prerequisite: IDES 340.

IDES430 Computer Rendering for Interior Design (3 credits)

In this newly offered course, students will learn the rendering techniques of the interior and exterior of any building. This course will be offered in a computer lab setting using CAD and Photoshop software together. The student should be familiar with 3D max and the rules and techniques of perspective. Internal and external. Prerequisite: IDES 340.

IDES445 Interior Design Studio III (4 credits)

This course covers conceptual and detailed studies of a long processing project that should work as a preparatory platform for the senior project. Students are initiated to work on the design of external elevation as well as the interior, covering concepts, aesthetics, techniques, lightings and their use in interior design. The purpose is to enable students to relate the different functions and integrate them in harmony with the use of the designed space. They will also be able to associate the space with the external world as an entity. Prerequisite: IDES 394.

IDES480 Professional Practice (2 credits)

In this course students will have to work as a trainee at an interior design firm with hands-on presentation of feasibility studies, bills of quantities budgeting, pricing, bidding, contracting work, supervision and coordination as well as project management for a given project.

IDES495 Interior Design Senior Project (4 credits)

This course offers a high level of performing design. Students have to present their final project followed by a research. The project should show a mature level of design thinking and presentation. Prerequisite: Senior Standing

JORN300 News Writing & Reporting (3 credits)

How do we write news? The primary function of this course is to emphasize on news writing in theory and application. Issues dealing with structure, culture, social and economic concerns will be tackled along the prolonged applied emphasis of this course. Prerequisite(s): COMM 200

JORN370 Arabic News Writing & Reporting (3 credits)

Students will be skilled in the coverage of news writing and reporting in Arabic and will gain an access to the determinants of news coverage. Prerequisite(s): COMM 200+ARAB 200

JORN375 Journalism Workshop (3 credits)

This workshop aims at improving the writing skills of the students. During each class, one or more students will present a news bulletin intended for training them to speak in public, work out their reflexes in constructing clear sentences and encourage them to follow-up the news, selecting out the important information. Furthermore, the students will practice their writing and reporting skills, starting with simple sentences and ending with elaborated articles.

JORN380 Web Journalism (3 credits)

The course informs the students on the production process of magazines and newspapers, highlighting the similarities between the two. It aims at providing them with general knowledge in this field, from the first elaboration of an article to the final stage of distribution. The course focuses on the various professions in the field of magazine and newspaper production, as well as on the tasks and responsibilities of all the personnel involved in this process. In order to further their understanding of the production process, students are asked to carry out a personal research by visiting one magazine or newspaper, then reporting and analyzing their findings.

JORN400 Newspaper & Magazine Writing & Production (3 credits)

Newspaper & Magazine Writing & Production

JORN410 News Production (3 credits)

News Production will introduce the art of writing and the business side of print and digital press. The coursework will shed light on how to produce news (print and digital), and how to establish a news medium, emphasizing the business

plan which covers the whole production process: Content Gathering, Pre Press__Pre Publishing, Press__Publishing and Post Press__Post Publishing. The course aims to give students a realistic and hands-on introduction into the complex process of creating a newspaper/magazine/news website from scratch and the skills they need to do so. It will give students a general insight of the news making in the Arab world in general and in the Lebanese market in specific. Students will learn what difficulties are facing the news media and how advertising and rating agencies are shaping the news industry today, by controlling the main income sources of media outlets.

JORN440 Reporting of Public Affairs (3 credits)

Problems of preparing in-depth, interpretative, and analytical reports on public affairs for mass media, governmental reporting, and contemporary issues.

JORN450 Investigative Journalism (3 credits)

This class is an introduction to the theory and the history and practice of investigative Journalism. Students learn about the concept, the know-how, and the ethics and will gain practical experience working collaboratively on an in-depth reporting project.

JORN495 Senior Study in Journalism (3 credits)

Students will have the chance to complete a project in journalism where they would strategically use to market themselves. Prerequisite(s): Senior Standing

MATH100 College Algebra (3 credits)

Real numbers, polynomials, linear and quadratic equations, functions and their graphs, polynomial functions, partial fractions, systems of equations and inequalities, matrices and determinants.

MATH110 Pre-Calculus (3 credits)

Symmetry, graphs, rational functions, irrational functions, exponentials, logarithmic functions, exponential growth, trigonometric functions and their inverses, conic sections. Prerequisite: MATH 100.

MATH160 Calculus I (4 credits)

The topics of this course include rate of change, limits, continuity, inverse functions, trigonometric and hyperbolic functions, derivatives, chain rule and parametric equations, implicit differentiation, mean value theorem, curve plotting, indefinite integral, differential equations, integral rules, integration by substitution, estimating with finite sums, Reimann sums and definite integral, application to area, distance, volume and arc-length, fundamental theorem of calculus, and definite integrals, applications of integrals, volume by slicing and rotation about an axis, length of plane curves.

MATH210 Calculus II (3 credits)

The course material includes hyperbolic functions and their inverses and their derivatives integration techniques, improper integrals, sequences, infinite series, power series, Taylor and Maclaurin series and application of power series. The mathematical software Maple will be introduced and used in support of the comprehension of the material. Prerequisites: MATH160

MATH220 Calculus III (3 credits)

This text covers basic topics on infinite series, lines and planes in space, cylinders and quadric surfaces, functions of several variables, limits and continuity, Partial derivatives, chain rule, directional derivatives, Gradient vector, tangent planes, double and triple integrals, areas, moments, center of mass, volumes, double integrals in polar forms, triple integrals in cylindrical and spherical coordinates, line integrals, vector fields Green's theorem, surface integrals, Stokes theorem, and the divergence theorem. Students are required to solve extensive number of problems and computer assignment using the mathematical software package Maple.

MATH225 Linear Algebra with Applications (3 credits)

Introduction to the systems of linear equations and matrices, Gaussian eliminations, matrix operations, inverses, types of matrices, determinants and their applications, vector spaces, subspaces, linear independence, basis and dimension, rank and nullity, inner product spaces and orthogonal bases, eigenvalues and eigenvectors, applications from other disciplines such as physics, computer science, and economics.

MATH245 Statistics for Health Sciences (3 credits)

General introduction to statistical methods used in the health, biological, biomedical sciences, pharmacy and medical sciences. Topics include research methods and design, descriptive statistics, performance characteristics of diagnostic tests, graphical methods, probability, estimation, hypothesis testing, p-values, regression and correlation, and clinical trials. Prerequisite: ENGL 150

MATH260 Discrete Mathematics (3 credits)

Sets, elementary logic, method of proofs, induction, relations, functions, recurrence relations, difference equations, modular arithmetic, arithmetic in different bases, Boolean algebra, counting, combinatorial methods, complexity analysis, graphs, trees, algorithms, finite-state machines. Prerequisite: MATH 170 or Math Placement Test

MATH260L Discrete Mathematics Lab (1 credit)

Set theory, Logic, Relations, Functions, Induction, Classification of infinite sets, Cardinal numbers, Boolean Algebra.

MATH265 Introduction to Linear Algebra (3 credits)

Introduction to the systems of linear equations and matrices, Gaussian eliminations, matrix operations, inverses, types of matrices, determinants and their applications, vector spaces, subspaces, linear independence, basis and dimension, rank and nullity, inner product spaces and orthogonal bases. Prerequisite: MATH 170 or Math Placement Test.

MATH270 Ordinary Differential Equations (3 credits)

First-order equations, linear and non-linear differential, linearization, numerical and qualitative analysis, second-order equations, existence-uniqueness theorem, series solutions, Bessel s and Legendre s functions, Laplace transforms, systems of differential equations, applications and modeling of real phenomena. Prerequisite: MATH 220.

MATH310 Probability & Statistics for Scientists & Engineers (3 credits)

The concept of probability and its properties, descriptive statistics, discrete and continuous random variables, expected value, distribution functions, the central limit theorem, random sampling and sampling distributions, Hypothesis testing. Prerequisite: MATH 170

MATH315 Advanced Linear Algebra (3 credits)

LU and QR-decomposition, orthogonal matrices, change of basis, similarity, diagonalization, orthogonal diagonalization, linear transformations, kernel, range, eigenvalues, eigenvectors, complex vector spaces, additional topics in linear algebra, applications of linear algebra to other fields.

MATH330 Partial Differential Equations (3 credits)

Classification of partial differential equations, Linear partial differential equations, separation of variables, closed form solutions, transform techniques and numerical methods, Fourier series and Fourier transform, the Dirichlet and Neumann problems. Prerequisite: MATH 270.

MATH345 Introduction to Real Analysis (3 credits)

Real numbers, Algebraic properties of the set of real numbers and the continuum property - Archimedean axiom, Sequences of real numbers, Inferior and superior limits Bounded sequences, Limits - Convergent sequences, Bolzano-Weierstrass Theorem, Cauchy sequences, Functions of a real variable, Limits of a function of a real variable, Continuous functions and Differentiable functions.

MATH365 Abstract Algebra (3 credits)

Groups, subgroups, cyclic groups, permutation groups, cosets, Lagrange's theorem, homomorphisms, normal subgroups and quotient groups, rings, ideals, homomorphisms and quotient fields, and Euclidean and principal ideal domains. Prerequisite: MATH 250.

MATH375 Numerical Methods for Scientists & Engineers (3 credits)

Bases and number representation, analysis of error propagation and error correction, roots for non-linear equations, computational linear algebra, polynomial interpolation, approximation of functions by polynomials, numerical differentiation and integration, numerical methods for solving differential equations, Runge-Kutta method, numerical methods for solving systems of equations and differential equations. Prerequisite: MATH 265 and CSCI 250.

MATH380 Complex Variables (3 credits)

Complex numbers and their elementary properties, analytic functions, continuity and differentiability, Cauchy-Riemann conditions, complex integration, Morera's theorem, the Fundamental Theorem of Algebra, power series, Taylor series, Laurent series, residues and poles, conformal mapping, Cauchy-Christoffel transformation. Prerequisite: MATH 220

MATH385 Introduction to Topology (3 credits)

Topological spaces, open sets, closed sets, subspaces, basis, continuous functions, connected spaces, compactness, product and quotient spaces. Prerequisite: MATH 200.

MATH405 Number Theory (3 credits)

Divisibility of integers, congruencies, arithmetic functions, Diophantine equations, primitive roots, second order congruencies, quadratic residues, Legendre symbol, Jacobi symbol, higher order polynomial congruencies, as well as application to cryptography.

MATH420 Differential Geometry (3 credits)

Geometry of curves and surfaces in Euclidean three space, calculus on a surface, intrinsic geometry of surfaces, theory of differential manifold, topological groups, differential forms, Frenet's formulas, Gaussian curvature, Cartan's structure equations, local and global theory of parameterized curves, Gauss map, intrinsic geometry of surfaces. Prerequisite: MATH 320.

MATH455 Mathematical Analysis (3 credits)

A rigorous study of the theory of calculus: topology of the real line, sequences and series of real numbers, the completeness axiom, real-valued functions, limits, continuous functions, intermediate value theorem, uniform continuity, extreme values, differentiation, mean-value theorem, uniform convergence of sequences of functions, integration, the Riemann integral, the fundamental theorem of calculus. Prerequisite: MATH 220, MATH 250.

MATH460 Functional Analysis (3 credits)

Banach, Hilbert, and L_p spaces. locally convex spaces (duality and separation theory, distributions, and function spaces). Operators on locally convex spaces (adjoints, closed graph/open mapping and Banach-Steinhaus theorems). Banach algebras (spectral theory, elementary applications). spectral theorem for Hilbert space operators. Lebesgue measure on the reals. Construction of the Lebesgue integral and its basic properties. Monotone Convergence Theorem, Fatous Lemma, and Dominated Convergence Theorem. Integration of series. Continuity and differentiability theorems for functions defined by integrals. (A working knowledge of real variables, general topology, and complex variables is assumed).

MATH465 Selected Topics in Undergraduate Mathematics (3 credits)

Selected Mathematics topics that are of interest for students and instructor

MATH475 Computational Mathematics (3 credits)

Algebraic, symbolic, and numerical computations, modern concepts of visualization, applications towards calculus, differential equations, linear algebra, data analysis, numerical analysis, and special functions.

MATH490 Modern Topics in Algebra (3 credits)

Theory of fields and related algebraic structures, extension fields, and Galois theory. Prerequisite: MATH 365.

MATH495 Mathematics Senior Project (3 credits)

Selected topics in mathematics chosen by the student with the agreement of the instructor. Prerequisite: Senior Standing.

MATH500 Complex Analysis (3 credits)

Conformal mappings, Schwarz-Christoffel transformation, transform methods, analytic functions, and elliptic functions.

MATH502 Algebra (3 credits)

Sylow Theorems, finite abelian groups. Ring theory: rings, integral domains, fields of quotients, homomorphisms, ideals, quotient rings, P.I.D.s, U.F.D.s, polynomial rings. Advanced topics in linear algebra: canonical forms. Field theory: extensions, splitting fields, finite fields, geometric constructions.

MATH510 Real Analysis (3 credits)

Lebesgue measure; general measures; measurable functions; integration (monotone and dominated convergence theorems); function spaces; Lebesgue spaces; modes of convergence; product measures; Fubini theorem. Differentiation; relationship between differentiation and integration; Radon-Nikodym theorem.

MATH511 Analysis in Euclidean Spaces (3 credits)

The Fourier transform in L_1 and L_2 and applications, interpolation of operators, Riesz and Marcinkiewics theorem, and singular integral operators.

MATH515 Advanced Numerical Analysis (3 credits)

Numerical solutions for non-linear systems of equations, boundary-value problems for ordinary differential equations, and numerical solutions to partial differential equations.

MATH516 Optimization Theory (3 credits)

Unconstrained optimization, descent, Newton-like, conjugate direction, restricted step methods, constrained optimization, linear programming, quadratic and non-linear programming, and non-smooth optimization.

MATH518 Topics in Number Theory (3 credits)

Topics from Dirichlet series, prime number theorem and its improvements, class number theorem, modular form, distribution of primes, analytic number theory in algebraic number fields, transcendental numbers and advanced theory of partitions.

MATH520 Functional Analysis (3 credits)

Topological vector spaces, completeness, normed and Banach spaces, linear operators, inner product bounded operators in Hilbert spaces, fundamental theorems, Hahn-Banach theorem, uniform boundedness theorem, open mapping theorem, closed graph theorem, spectral theory, operators on normed spaces, compact operators, and self-adjoint operators.

MATH522 Topology (3 credits)

Topology Topological spaces and continuous functions; connectedness; compactness; product and quotient spaces; metric spaces; Urysohn's lemma; function spaces and modes of convergence; Tietze extension theorem; homotopy; covering spaces and path lifting; the fundamental group and examples; Brouwer fixed point theorem and applications.

MATH524 Mathematical Fluid Dynamics I (3 credits)

Fundamentals: Euler and Lagrange formulations, constitutive relations, derivation of the conservation equations, Kelvin's equation and vorticity; gas dynamics: Euler equations, Bernoulli's equations, shock waves, hodograph transformation, The substitution principle, unsteady one-dimensional flow.

MATH525 Finite Element Methods (3 credits)

Topics may include regularity theory for second order elliptic partial differential equations; Hamilton-Jacobi equations; conservation laws; evolution equations; semigroup theory; calculation of variations; nonvariational methods. Sobolev spaces, variational formulations of boundary value problems, piecewise polynomial approximation theory, convergence and stability, and special methods and applications.

MATH530 Distribution Theory (3 credits)

Space of continuous functions, functions of bounded variations, LP spaces, test functions and distributions, density theorems, Sobolev spaces and applications. (prerequisite: MATH520)

MATH534 Mathematical Fluid Dynamics II (3 credits)

Exact solutions for viscous flow: Rayleigh flow, Couette flow, stagnation point flow; laminar boundary layer theory for axisymmetric flow: incompressible flow over a flat plate, large Reynolds number flow, incompressible boundary layer theory, compressible boundary layer theory, thin airfoil theory. (prerequisite: MATH524).

MATH536 Field Theory (3 credits)

Finite and infinite algebraic extensions, cyclotomic fields, transcendental extensions, bases of transcendence, Luroth's theorem, ordered fields, valuations, and formally real fields, Galois theory. (prerequisite: MATH502).

MATH540 Partial Differential Equations (3 credits)

Operator theory, linear elliptic equations, nonlinear elliptic equations, energy methods for evolution problems, semigroup methods. (prerequisite: MATH520, corequisite: MATH530).

MATH542 Algebraic topology (3 credits)

Fundamental groups, covering spaces, universal covers, Deck Transformations, Homotopy groups, exact sequences, fiber spaces, van Kampen theorem, and fundamental groups of 1 and 2 complexes. (prerequisite: MATH522).

MATH544 Computational Fluid Dynamics (3 credits)

Finite difference method, weak form of partial differential equations, Galerkin form interpolations and shape functions, spectral method, orthogonal functions, pseudo spectral method, control (finite) volume method, control volume formulation, heat conduction, convection, and diffusion problems, calculation of flow field, applications in heat transfer and fluid flow, grid generation, post-processing of data. (prerequisite: MATH524, corequisite: MATH534).

MATH545 Ordinary Differential Equations (3 credits)

Existence and uniqueness of solutions; linear solutions and linearization; linear differential equations in the complex domain; solutions near regular and irregular singular points; autonomous systems; stability theory; limit cycles; perturbation theory; boundary value problems; Greens function; spectral theory.

MATH546 Lie Groups and Lie Algebra (3 credits)

Lie groups, Lie algebras, exponential mapping, Lie subgroups and subgroups, simply connected groups, adjoint representation, semi-simple groups, infinitesimal theory, Cartan's criterion.

MATH550 Non-Euclidean Geometries (3 credits)

Projective spaces over division rings, Desargues and Pappus theorem, axiomatic foundations, the duality principle, quadrics, classifications of quadrics, Pappus and Brianchon's theorems, Poncelet's theorem, hyperbolic geometry, models of the hyperbolic space and the transition between them, isometries, and hyperbolic trigonometry.

MATH554 Continuum Mechanics (3 credits)

The general laws governing the mechanical behaviour of continuous media such as elastic solids, fluids and gases. The continuum idealization. Tensors in mechanics, stress and strain. Conservation laws, Constitutive relations. Linear elasticity, Newtonian fluids.

MATH555 Dynamical Systems (3 credits)

Fundamental concepts, extensive survey of examples, equivalence and classification of dynamical systems, stability, principal classes of asymptotic invariants, and circle maps.

MATH556 Matrix Theory (3 credits)

Majorization and doubly stochastic matrices, variational principles for eigenvalues, spectral variation of normal matrices, spectral variation of non-normal matrices, and inverse eigenvalue problems for non negative and doubly stochastic matrices.

MATH560 Modern Differential Geometry (3 credits)

Manifolds: Charts, Atlas, induced topology, differentiable map between 2 manifolds, germs. Tangent spaces : Tangent vector, the manifold TM , vector fields, derivation on an algebra, bracket, the tangent map, the cotangent manifold T^*M , fields of 1-form. Immersion, submersion, the rank theorem, immersed parts, sub-tangent space of an immersed part, submanifolds. Differential equations and integral manifolds: System of differential equations, theorem of existence and uniqueness, flows, sub-integral manifolds, Frobenius theorem.

MATH565 Applied Nonlinear Partial Differential Equations (3 credits)

Topics chosen from: quasilinear and nonlinear first-order equations; jump conditions, shock formation; shallow water waves, gas dynamics, hodographs; similarity methods, reaction-diffusion, advection-diffusion, asymptotic solutions; travelling wave, maximum principles, energy estimates; elliptic models, eigenvalue problems, stability, equation splitting, inversion of dependent and independent variable, contact transformations, Legendre transformation,; weighted residual methods, perturbation techniques.

MATH566 Graph theory (3 credits)

Graphs, subgraphs, connectivity, trees, Hamiltonian graphs, matchings, coloring, connectedness in digraphs, Euler and Hamilton graphs, networks, automorphism of graphs, matrices and graphs, and non-negative inverse eigenvalue problem for matrices subordinates to a given graphs.

MATH570 Riemannian Geometry (3 credits)

Tensor Algebra on a manifold: Tensor fields, alternating tensors, tensor products. Riemannian metrics, Linear connection: covariant derivative, parallel transport, torsion and curvature, the identity of Bianchi, Levi-Civita connection. Geodesics: local existence, exponential map, minimal geodesics, theorem of Hopf-Rinow, completeness and isometries. (prerequisite: MATH560).

MATH571 Fractal Geometry (3 credits)

Hausdorff measure and dimension, techniques for calculating dimensions, local structure of fractals, projections of fractals, products of fractals, intersections of fractals, applications and examples. (prerequisite: MATH510, MATH522).

MATH576 Statistics (3 credits)

Possible topics: Chi-square for qualitative multiple regression and time series for quantitative data, analysis of variance and chi-square tests, nonparametric regression and yield curve smoothing, advanced time series, logistic regression, and log-linear models.

MATH582 Mathematics Education (3 credits)

Philosophy, content, and process of mathematics instruction. Topics include: Instructional strategies, classroom management, assessment techniques, lesson planning, special needs.

MATH583 Topics in Mathematics (3 credits)

Material currently of interest to students and faculty. Topics to be announced in Schedule of Classes.

MATH585 Topics in Applied Mathematics (3 credits)

Topics of special interest such as differential equations; calculus of variations; elliptic functions; orthogonal functions; numerical methods; systems and control theory. Topics to be announced in Schedule of Classes.

MATH586 Topics in Statistics (3 credits)

Material currently of interest to students and faculty. Topics to be announced in Schedule of Classes.

MATH595 Special graduate skills (0 credit)

This course will introduce students to academic skills concerning preparing and writing proposals, projects, grants, thesis, articles, and how to present seminars.

MATH599 Thesis (6 credits)

Students will conduct some research connected to some of the areas within Mathematics. Students should coordinate with a supervisor at the university to select the subject. The student should carry out the work under the supervisor's direction and at the end, present orally the thesis to a committee in an official seminar.

NUTR250 Basic Nutrition (3 credits)

"Introduction to the science of nutrition. Study of the principles of nutrition and their application within the concepts of wellness, fitness and health, personal food choices, food groups and guides, choice of nutritionally balanced diets and diet planning, basic information about nutrients and energy and their sources, identifying truths and untruths among advertised claims of food products, in addition to the current controversial issues about supplementation and popular diets are discussed."

NUTR315 Human Nutrition and Metabolism (4 credits)

The course will focus on the essential nutrients with emphasis on structure, function metabolism and factors affecting utilization. The role of nutrients in the biochemical processes and symptoms of deficiency and excess will be covered.

NUTR351 Nutritional Assessment and Counseling (4 credits)

The aim of the course is to familiarize the students with the methods available to assess the nutritional status of individuals. It focuses on the ABCDs of nutrition assessment, which are anthropometry, biochemical, clinical and dietary. The course also has a counseling component, where the student will learn the various counseling techniques. In addition to the theoretical part, the course has a practical component as well. The student will learn to apply the theories they learn in class using various tools and techniques.

NUTR400 Nutrition Through Life Span (3 credits)

Role of nutrients and diets in growth, development, maturation, and aging throughout the state of life from pre-conception through old age. Nutrients' requirements throughout the different age groups are discussed. Prerequisites: NUTR 300

NUTR411 Therapeutic Nutrition (4 credits)

This course merges the pathophysiology of diseases with nutritional sciences and provides an insight into therapeutic nutrition principles for the treatment of common diet-related health conditions. The student will relate diseases to nutrition, and therefore will know the appropriate nutritional care provided for specific cases. This course aims to teach the student how to manage different diseases through nutrition therapy

NUTR440 Obesity & Regulation of Body Weight (3 credits)

This course is a multidisciplinary discussion of the causes, effects, and treatments of human obesity. Topics include the biopsychology of eating behavior, the genetics of obesity, the role of activity and energy metabolism, the psychosocial determinants of obesity, anorexia nervosa, Bulimia, therapy and its effectiveness, and social discrimination. Prerequisites: Senior Standing, Course in Psychology & Course in Sociology

NUTR450 Community Nutrition (3 credits)

Application of the science of nutrition to the population benefit. It promotes good health through nutrition and prevention of diet-related illness in communities through application of nutrition principles to the planning, funding, implementation, monitoring and evaluation of community nutrition programs and activities. Practical experience with community nutrition programs is recommended. Prerequisite: NUTR 300

NUTR475 Inborn Errors of Metabolism (3 credits)

Deals with congenital defects that require special diet planning and manipulation. Metabolic pathways and food chemical composition in relation to the inborn errors are discussed. Prerequisite: Senior Standing

NUTR485 Selected Topics in Clinical Nutrition (3 credits)

In this course selected topics of some clinical cases in which medical nutrition therapy plays a major role in their prevention and treatment are being discussed. Cases include: cancer, trauma and burns, pulmonary diseases, and anemia. Also nutrition support and functional foods are covered.

NUTR490 Nutrition Seminar (1 credit)

Presentation of clinical case report or a published research work under the supervision of a faculty member. Written report is a must.

PHYS100 College Physics I (3 credits)

"Fundamentals of mechanics, including vectors, velocity and acceleration, falling bodies and projectiles in two motions, forces and Newton's three laws, conservation of energy theorem, Linear momentum, and circular motion. Fundamentals of mechanics, including vectors, velocity and acceleration, falling bodies and projectiles in two motions, forces and Newton's three laws, conservation of energy theorem, Linear momentum, and circular motion."

PHYS160 College Physics (3 credits)

Fundamentals of mechanics, including vectors, velocity and acceleration, projectiles in two motions, forces and Newton's laws, conservation of energy theorem, Linear momentum, Electric forces and Electric Fields, electric potential energy and voltage, Ohm's Law, Magnetism, reflection and refraction, mirrors and thin lenses. Prerequisites: ENGL151

PHYS210 Mechanics (3 credits)

Vectors, motion in one and two dimensions, Circular motion, Conservation of Energy and momentum, Gravitational Laws, Kepler's Laws, Fluids. Prerequisite(s): ENGL 150

PHYS220 Physics for Engineers (3 credits)

Electricity, Electric Field and Electric Potential, Magnetism, Biot-Savart Law, Ampere's Law, Faraday's Law, Fluid Mechanics, Wave Motion, Sound Waves, Superposition and Standing Waves, Temperature, Heat, Laws of Thermodynamics.

PHYS250 Thermodynamic and Waves (3 credits)

Temperature, heat, laws of thermodynamics, heat engines, waves, sound waves, geometrical optics, interference and diffraction. Prerequisite(s): PHYS 200

PHYS250L Thermodynamic and Waves Lab (1 credit)

Students apply Hooke's law, Archimedes principle, speed of sound, free fall, simple pendulum, torsion pendulum, gravimetry, viscosity of liquids, frictional forces. Co-requisite(s): PHYS 250

PHYS280 Electricity and Magnetism (3 credits)

Electricity, electric field and electric potential, Electric current, Gauss law, capacitors, resistance, Ohm's law, Kirchhoff's laws, magnetism, Ampere's law, Biot-Savart law, Faraday's law, and RLC circuits. Prerequisite(s): ENGL 150

PHYS280L Electricity and Magnetism Lab (1 credit)

Kirchoff's law, capacitors in series, resistors in series, Faraday's law, use of oscilloscope, magnetic fields, electric fields are explored and applied. Co-requisite(s): PHYS 280

PHYS300 Mathematical Physics (3 credits)

Vector Calculus, Complex Variables, Sturm-Liouville Systems, Special Functions, Partial Differential Equations, Fourier Analysis. Prerequisite(s): MATH220+MATH270+MATH225

PHYS330 Electromagnetic Fields and Waves I (3 credits)

Electrostatics, Electric fields in matter, method of images, Magnetostatics, Magnetic fields in matter, electric field intensity, energy and potential, conductors, dielectrics, and capacitance, Maxwell's Equations, Poisson's and Laplace's equations, steady magnetic fields, and multipole expansion. Prerequisite(s): PHYS 250

PHYS340 Modern Physics (3 credits)

Special Theory of Relativity, experimental foundations of modern physics, dual nature of light and particles, Bohr model of the atom, Hydrogen atom spectrum, tunneling phenomena, Atomic Structure, Schrodinger equation, quantum numbers and spin of the electron. Prerequisite(s): PHYS 250

PHYS340L Atomic Physics Lab (1 credit)

Speed of light, Frank-Hertz experiment, photoelectric effect, Rutherford experiment, specific charge of the electron e/m , fine structure- $n=1$ & $n=2$ spectra-, Balmer series/ Determination of Rydberg's constant. Co-requisite(s): PHYS340

PHYS350 Physical Optics (3 credits)

Wave phenomena with specific applications to waves in media and electromagnetic phenomena, Wave equations, propagation, radiation, coherence, interference, diffraction, scattering Light and its interaction with matter. Topics in geometrical and physical optics including interference diffraction, polarization, and laser physics. Prerequisite(s): PHYS 250

PHYS350L Physical Optics Lab (1 credit)

Observation of reflection, refraction, index of refraction of liquids, interface, double slit experiment using laser, prisms, light dispersion. Also application on Brewster angle, polarization, dispersion & resolving power of the prism & grating spectroscopy. Co-requisite(s): PHYS 350

PHYS360 Analytical Mechanics (3 credits)

Advanced Newtonian mechanics, Kepler's laws, Lagrangian, Hamiltonian, central forces, oscillations, coupled oscillations, motion of rigid bodies. Prerequisite(s): PHYS 210+ MATH 220+ MATH 270.

PHYS370 Nuclear Physics (3 credits)

Foundations of quantum theory, introduction to wave mechanics, Atomic Structure, Molecular Structure, molecular vibration and rotation, nuclear structure and nuclear physics applications. Prerequisite(s): PHYS 320.

PHYS380 Electromagnetic Fields and Waves II (3 credits)

Waves and phasors, transmission lines, Maxwell's equation for time varying fields, plane waves, guided waves, radiation and antennas, reflection and refraction at oblique surfaces, ionized media, anisotropic materials, approximate methods in electromagnetic, and scattering of electromagnetic waves. Prerequisite(s): PHYS 330.

PHYS390 Astronomy (3 credits)

A survey of astronomy introducing students to phenomena in the solar system, stars, galaxies, and the Universe. Observation sessions included Prerequisite(s):PHYS210+PHYS340+ENGL251

PHYS420 Quantum Mechanics (3 credits)

Operators and observables, hermitian operators and unitary transformations, one dimensional potential, harmonic oscillator, uncertainty relations, mathematics of quantum theory, linear algebra and Hilbert spaces, postulates of quantum theory.

PHYS430 Thermal Physics I (3 credits)

The laws of thermodynamics, statistical basis of thermodynamics, ensemble theory, equilibrium statistical mechanics and its application to physical systems of interest, Gibbs energy, irreversibility, transport, and the approach to equilibrium. Prerequisite(s): PHYS330+PHYS340.

PHYS450 Solid State Physics (3 credits)

This course is designed to develop an understanding of the basic principles of solid state physics; the course gives an introduction to crystal structures, x-ray diffraction, band theory, overview of semi-conductors, and other solid state topics. Prerequisite(s): Senior/Consent of Instructor

PHYS465 Selected Topics in Undergraduate Physics (3 credits)

Selected Physics topics that are of interest for students and instructor

PHYS470 Advanced Quantum Mechanics (3 credits)

quantum theory, linear algebra and Hilbert spaces, postulates of quantum theory, one dimensional applications, the harmonic oscillator, uncertainty relations, systems with N degrees of freedom, multi-particle states, identical particles, approximation methods, classical symmetries, quantum symmetries, rotations and angular momentum, spin, addition of angular momentum, the hydrogen atom, quantum paradoxes and Bells theorem.

PHYS480 Thermal Physics II (3 credits)

Einstein statistics are reviewed. These principles are then applied to applications such as electronic specific heats, Einstein condensation, chemical reactions, phase transformations, mean field theories, binary phase diagrams, paramagnetism, ferromagnetism, defects, semiconductors and fluctuation phenomena. Prerequisite(s):PHYS430.

PHYS490 Physics Seminar (1 credit)

Physics Seminar. Prerequisite(s): PHYS380+PHYS340+ENGL251.

PREL300 Public Relations Principles & Concepts (3 credits)

Communicative, persuasive and social functions, focus on PR and Advertising messages, Strategies, creative planning, execution and social effects. Prerequisite(s): PREL 200.

PREL360 Public Relations Practice & Analysis (3 credits)

Principles and theory of public relations management and organization. Relationships with various groups and clientele. Mass media, employees, and consumers. Prerequisite(s): COMM 200

PREL375 Specialized Writing in Public Relations (3 credits)

Public Relations writing for science, technology, health, medicine, corporate finance, educational policy, law and government in broadcast and technical media, as well as newspapers, magazines, proposals, speeches and correspondence.

PREL380 Communication Tools in Public Relations (3 credits)

Communication Tools in Public Relations

PREL390 Public Relations & Advertising (3 credits)

The course work will make familiar strategies of making the product or service familiar to the people, reminding them of it, spreading news about the product and adding value to the product with an emphasis on structuration theory, and various public relations techniques. Prerequisite(s): ADVR 350

PREL405 Public Relations Event management (3 credits)

Public Relations Event management

PREL415 Public Relations and Marketing (3 credits)

The course discusses communicative, persuasive and social functions. It focuses on public relations and advertising messages, strategies, creative planning, execution and social effects.

PREL420 Crisis Communication in PR (3 credits)

This class provides students with the necessary procedures in order to handle a client that is under pressure__facing a public crisis. As such, they will learn how to deal with the different media outlets, whether traditional__social and will train the company employees on the best way to face such a storm. Previous case studies will be over viewed in order to learn lessons and to prepare top what might come ahead in order to adopt the right strategies and avoid tactics that might misfire

PREL430 Public Relations Campaign (3 credits)

Advanced student's understanding of the public relation process by assigning students the task of planning, carrying out, and evaluation on public relation campaign. Prerequisite(s): PREL 360

PREL432 Social Media in Public Relations (3 credits)

This course explores the dimension social Media has added to the practice of current public relations in theory and hands-on. It consists of cases touching to corporate image and reputation and how social media was used –and sometimes abused.

PREL445 Critical Inquiry & Public Relations (3 credits)

An overview of the methodology in critical inquiry. Students will as well be introduced to various researchers and researches done using the proceeding methodology such as Edward Said, Dwight Conquer good & various others. Students will learn how to think critically in order to establish change & development in their public relations arena of work. Prerequisite(s): PREL 360

PREL450 Public Relations Workshop (3 credits)

This course provides an opportunity for students to work as practitioners of Public Relations within the content of a simulated professional work environment. The course also starts with revising some key concepts related to the Public relations practice, such as image, identity, impression management, public opinion and public communication.

PREL455 Public Speaking (3 credits)

A practical course in taking on the task of persuading the masses, through the presentation of multiple, oriented and successful delivery of speeches. An emphasis on the language, and addressing codes and symbols of communication. Prerequisite(s): PREL 360

PREL495 Senior Study in Public Relations (3 credits)

Students will gain a complete comprehension and display of a public relations campaign. Prerequisite(s): Senior Standing

RATV230 Radio-TV Workshop II (3 credits)

As video, film, and television production is a collaborative field, students will learn to function as members of an integrated production team on a wide variety of projects. Through this process, students learn the skills required for positions in the video, film and television production industry and develop professional standards and attitudes towards their work. Skills and proficiencies are enhanced by supervised repetition and practice within class periods. Learning objectives are obtained through active participatory experience in weekly group assignments. Production assignments explore what really goes on in industry production environments. Professional personnel must work under constant deadlines; as such, the courses structure is designed to develop a strong sense of efficient time management as well as reaching beyond the basics learned in prerequisite courses.

RATV315 Television Production (3 credits)

This course introduces the principles, procedures, and techniques used in television production. The course includes video control, special effects, operation of cameras and editing machines, composition, lighting, staging, and directing, on-camera announcing and interviewing.

RATV316 Mobile Media (3 credits)

The course is an exploration of new video technologies involving digital photography and portable video production, post-production and broadcast. It is a study of streaming media for distribution on hand-held devices, vidcasts or Podcast

RATV370 Writing for Radio and TV (3 credits)

The course introduces the students to the characteristics and rules for effective writing for radio and TV while focusing on writing for news, documentaries and talk shows. It teaches the students the best ways to write for the ear in the case

of writing for radio while focusing on the two levels that characterize such writing: Voice Over and Natural Sound. As for writing for TV it gives guidelines on how to write for the eye and ear by using efficiently the four available levels: Picture, Voice Over, Natural Sound, Graphics.

RATV425 TV Directing (3 credits)

Our TV directing course will start up from the technical work shop the students have finished earlier and how to implement what they have learned in this course. Students will be introduced to different types of schools in directing from American to European to Arabic and Indian. They will also be introduced to different types of directing- talk show, documentary, and drama.

RATV430 Radio Production (3 credits)

This course is an introductory course presenting all aspects of Radio Broadcasting. We will explore different departments of a radio station: The operation as a whole, the employees and their job description the studios and the equipment. We learn how to prepare and execute different types of Radio production. The fun part of this course is the application, when it is time to perform and execute the projects.

RATV435 Radio-TV News (3 credits)

This course intends to introduce students to the process of producing a news bulletin, starting with handling the news and editing it in a report, live voice over, still store, etc, to compiling these news in an organized and hierarchical order based on: audience analysis, priority of the event and its importance, the rhythm of the bulletin

RATV440 Digital media production (3 credits)

The Digital Media Production course offers foundational knowledge applicable to a wide range of current media-related professions. The student will have the opportunity to develop hands-on production skills, achieve technical proficiency, and make sophisticated choices in the creation of digital media. This course will introduce software, design skills, and production techniques for creating digital media. We'll look at examples each week from digital cinema, interactive media, marketing, and journalism. Using DSLR cameras, Photoshop, and other Adobe Creative Cloud programs, students will produce photographs, illustrations, animated podcasts, and sound design work.

RATV495 Senior Study in Radio and TV (3 credits)

This course is an end-product experience with the processes of fine-tuning a flood of ideas into an individual video project, a translation of ideas into an audiovisual production reality. In this class students are exposed to a diversity of concepts and themes (social, political, psychological, humanitarian... etc.) that would guide them throughout their research. Students are challenged into a creative call for concepts and critiques to determine which idea should be taken to the finish and how to research, organize and produce an audiovisual project. Senior students are exposed to the thinking of a variety of professionals in their field of interest according to their choice of subject and genre. The course is designed to be hands on approach where students will write, direct, produce and edit their own work, all while under the umbrella of instructor supervision. Class continuity is maintained by a mentor who is present at all sessions to advice and critique.

RTVF330 Fundamentals of Makeup Artistry (3 credits)

This course provides proper makeup application techniques through theory and practical sessions. It includes definitions, history, facial shapes and balance, color classifications, analysis of a face, features and skin prior to makeup application, hygiene, proper makeup application steps and techniques including corrective makeup, supplies, brushes and products used. Students learn to create a variety of makeup styles suitable for day and evening. Industry looks, such as, special events, print, photography, television, film and theater are also reviewed. Students will progress from enhancing the elements of their work to producing realistic manifestations of aging.

RTVF340 Script Writing (3 credits)

Students will gain a comprehension of the strategies used in documentary, feature story, voice over, dubbing, and various other writings for theater, TV & film. Including broadcast and news writing. Prerequisite(s): COMM 200

RTVF400 Talk Show (3 credits)

Students are introduced to technicalities, approaches and strategies used in TV and Radio Talk Shows with a variety of hosts, collection of biographical information, and discussion forums. Prerequisite(s): COMM 250 & COMM 265 & RTVF 320

RTVF410 Art of Film (3 credits)

An overview of significant films that accordingly had an influence on the state –of-art, where the importance of the image as well as dramatic elements such as character, plot, scenery, lightning, zoomin, zoomout, and other content & technical materials will be noticed and discussed. Prerequisite(s): COMM 200

RTVF440 Music Production (3 credits)

Course description: It is an in-class learning music approach and sound design, forming a learning musical station and piano laboratory for group performances. The ultimate purpose of this course will open new opportunities and horizons to each student to discover the modern technology of music and sound, home studio and Film scoring and sound designing.

RTVF494 Video Production and Post Production (3 credits)

Video Production and Post Production: this course is complementary to Video Pre production and focuses on the stages of production and post production in order to produce a video project.

6 School of Education

6.1 Vision

The School of Education at the Lebanese International University is recognized nationally and internationally as one of the leading schools in promoting 21st-century learner-centered academic excellence for future educators and translators, rigorous research experiences, and community service through initiating diversity, equity, and inclusion. While the School of Education aspires to empower its students, undergraduates, and graduates, to become career-oriented lifelong learners, it also supports them to excel in pursuing and sustaining knowledge and innovative digital learning and provide educational wellbeing for society.

6.2 Mission

The mission of the School of Education at the Lebanese International University is to provide equity, diversity, inclusion, and sustainability to quality educational programs and effective teaching and learning methodologies by adopting learner-centeredness. The School of Education intends to produce academic excellence, embed citizenship, shape career-oriented future leaders, reframe the research process on global educational trends, and integrate core skills in a blended digital learning environment. The School of Education will endorse community service and will align its values to a wider educational community.

6.3 Value

We value the importance of teaching and research within a major research university.

Integrity: Strict adherence to moral values and principles.

Excellence: Exceeding expectations, maximizing potential, and demonstrating considerable skill and accomplishments.

Quality: Strives to provide high-quality delivery of teaching and learning that meet the expectations and requirements of its students.

Sustainability: Making decisions and acting with regard to the value and finite nature of resources, including the environment.

Respect: Showing due deference to the innate dignity and value of others.

Team Spirit: Working together towards a common goal.

Diversity: A point of respect in which things differ; variety.

Inclusion: The act of creating environments in which any individual or group can be and feel welcomed, respected, supported, and valued to fully participate.

Empowerment: Valuing team members and giving them the information and the tools, they need to achieve results.

Equity: The state, quality, or ideal of being just, impartial and fair.
Educational Programs

The School of Education offers the following degrees: Bachelor of Education, Teaching Diploma and Master of Education. Students must complete a minimum of 99 credit hours (a 3-year program) for the bachelor's degree, except for the Bachelor of Translation and Interpretation (108 credits), 24 credit hours (a one-year program) for a teaching diploma and 39 credit hours (a two-year program) for a master's degree.

1. Bachelor of Education in Early Childhood Education – CHED
2. Bachelor of Education in Teacher Education (Biology-Chemistry) - TEBC
3. Bachelor of Education in Teacher Education (Mathematics - Physics) - TEMP
4. Bachelor of Education in Teaching English as a Second Language - TESL
5. Bachelor of Translation and Interpretation - TRANS
6. Masters of Education in Teaching English as a Second Language
7. Masters of Education in Educational Management
8. Teaching Diploma in Education - TD

6.4 Admission Requirements

6.4.1 Admission Requirements - Undergraduate Program

Application for admission should be submitted before the end of September of each year. However, applicants may be assessed and selected at any time of the year based upon their Lebanese Baccaureate II and/or their grade 12 (American System) examination results and University Placement Test(s) (UPTs). Furthermore, applicants to the undergraduate programs in the School of Education are subjected to the following general conditions:

1. Have earned a recognized High School Diploma; Baccaureate II, Lebanese System; or its equivalency that is either a freshman in sciences or in arts or foreign secondary school equivalent.
2. A candidate should have earned the Lebanese Baccaureate II or third year secondary with an overall average of at least 50%; the categories of the Lebanese Baccaureate are listed below:
 - a) General Science
 - b) Life /Natural Science
 - c) Sociology and Economics
 - d) Humanities
 - e) Baccaureate Technique (BT)
 - f) TS (Technical Superior) and LT (License Technique)
3. A Lebanese Baccaureate holder is exempted from a particular University Placement Test (UPT) if and only if the relevant course had been passed with 50 % and above

Table 22: School of Education Placement Criteria (Only Lebanese Baccaureate or its equivalency)

Subject	Score	Placement
English	0 - 30	ENGL051 Basic English Skills.
	31-40	ENGL101 Introduction to Oral and Written Skills.
	41-49	ENGL151 Advanced Writing Skills.
	50 and Above	Exempted from ENGL051, ENGL101, and ENGL151.
Mathematics	0 - 24	Math161
	25 - 49	MATH160 (Calculus I)
	50 - above	Exempted
Physics	0 - 24	PHYS161 (6 Credits)
	25 - 49	PHYS160 (3 Credits)
	50 - above	Exempted
Chemistry	25 - 49	CHEM160 (3 Credits)
	50 - above	Exempted
Biology	25 - 49	BIOL160 (3 Credits)
	50 - above	Exempted

The passing grade of the aforementioned scientific remedial courses is either Pass (*P*) or Non-Pass (*NP*) in which a passing grade cannot be less than 50%.

LIU English Hierarchy versus TOEFL Scale: The Lebanese International University (LIU) takes on TOEFL Scale as a benchmark to place applicants in various English levels. Based on the results of English Placement Test (EPT), students may be placed in English Remedial courses according to the Table 6 in section 2.7 above.

6.4.2 Admission Requirements - Graduate Program

Applications for admission in a master program should be submitted before the end of September of each year. However, applicants may be assessed and selected at any time of the year based upon their Bachelor degrees. However, applicants to graduate program in the School of Education must complete all required forms for admission as well as submit official transcripts from all colleges and universities attended. If a

student is expelled from another institution, the basis of admission would be the undergraduate degree and no courses are transferred.

The Lebanese International University Students: Graduates who wish to apply for the TD or Master Programs should have their Cumulative GPA of 2.0 and above.

Non-Lebanese International University Students and Non-Education Candidates: Applicants who have earned their Bachelor degrees from other universities, accredited by the Lebanese Ministry of Education and Higher Education, and their Cumulative Grade is at least 70 % (or equivalent in Non-American Systems) are welcome to continue their Master's degree in Education at LIU. As may be found necessary, applicants are also required to sit for the English Placement Test (EPT) and take specific remedial courses if their Bachelor degrees are Non-Education.

6.4.3 Transfer Students - Course Transfer Criteria

Courses taken at universities, accredited by the Lebanese Ministry of Education and Higher Education, are transferable by The Lebanese International University. Course transfer criteria adopted by the School of Education are as follows:

1. Transfer of undergraduate credits from other universities accredited by the Ministry of Education and Higher Education to LIU should not exceed 49 % of total required credits.
2. Transfer of graduate credits from other universities accredited by the Ministry of Education and Higher Education to The Lebanese International University should not exceed 40 % of the total required credits; the remaining 60 % of the total credits must be taken at LIU.
3. Transfer of credits for TD holders with 75 % Cumulative Grade from LIU to Master Program should not exceed 18 credits.
4. Transfer of credits for Master holders with Cumulative Grade of 80% from LIU to TD Program should not exceed 9 credits. The minimum grade of any transferred course cannot be less than 80%.
5. Undergraduate and graduate courses that have been transferred from another university to the university from which the applicant is transferring to are not recognized by LIU unless an associated transcript is provided.
6. An applicant who has earned a Bachelor's degree other than Bachelor of Education from an accredited university is eligible to join the Master's program, subject to taking specific Remedial courses.
7. Transferable courses are subject to passing grades shown in Table 23 below:

Table 23: Courses Transfer Criteria - School of Education

System	Transferable Grade Undergraduate	Transferable Grade Graduate
American System	70 % and Above	80 % and above
French System	50 % and Above	70 % and above

6.5 Graduation Requirements

6.5.1 Undergraduate Program

An undergraduate student pursuing a Bachelor degree in the School of Education (TESL, CHED, TEBC, and TEPM) can only graduate upon the fulfillment of the program requirements, as indicated below:

1. A minimum of 15 credits of General Education Requirements.
2. A minimum of 9 credits of General Education Electives.
3. A minimum of 39 credits of Core Requirements.
4. A minimum of 30 credits of Major Requirements.
5. A minimum of 6 credits of Major Electives.
6. A minimum of 99 credit hours in total.
7. A minimum Cumulative Grade of 70 %.

In addition, an undergraduate student pursuing a Bachelor's degree in the School of Education in Translation can only graduate upon the fulfillment of the program requirements, as indicated below:

1. A minimum of 15 credits of General Education Requirements.
2. A minimum of 3 credits of General Education Electives.
3. A minimum 42 credits of Core Requirements.
4. A minimum of 48 credits of Major Requirements.
5. A minimum of 3 credits of Major Electives.
6. A minimum of 108 credit hours in total.
7. A minimum Cumulative Grade of 70 %.

6.5.2 Graduate Program

Thesis Option:

A graduate student pursuing a Master's degree in the School of Education can only graduate upon the fulfillment of the program requirements, that is, 39 credits including 6 credits thesis and his/her Cumulative Grade of at least 80 %.

Non-Thesis Option:

A graduate student pursuing a Master's degree in the School of Education can only graduate upon the fulfillment of the program requirements, that is, 39 credits including 3 credits project and his/her Cumulative Grade of at least 80 %.

6.6 Program of Study – Undergraduate program

6.6.1 Teacher Education: CHED, TEMP, TEBC

About the program

Teacher Education provides pre-service and/or in-service teachers with rigorous and personally meaningful experiences that cultivate creative and critical understandings related to the processes of teaching and learning in their own area of specialty through philosophical, theoretical, technological and instructional frameworks which foster exemplary inclusive practice and scholarly inquiry across diverse educational contexts.

The mission of the Early Childhood Education/ Biology - Chemistry) (TEBC)/ (Physics - Mathematics) (TEPM) in the undergraduate program is to provide preservice teachers with rigorous and personally meaningful experiences that cultivate creative and critical understandings related to the processes of teaching and learning at the early childhood level (from 0 - to - 8 years) through philosophical, theoretical, technological and instructional frameworks which foster exemplary inclusive practice and scholarly inquiry across diverse educational contexts.

Career Opportunities

Most of the graduates of this program find employment as:

- | | |
|--|---|
| <input type="checkbox"/> Art Teacher | <input type="checkbox"/> Music Teacher |
| <input type="checkbox"/> Biology Teacher | <input type="checkbox"/> Physical Education Teacher |
| <input type="checkbox"/> Elementary Teacher | <input type="checkbox"/> Preschool Teacher |
| <input type="checkbox"/> English Teacher | <input type="checkbox"/> Principal |
| <input type="checkbox"/> ESL Teacher | <input type="checkbox"/> School Administrator |
| <input type="checkbox"/> High School Teacher | <input type="checkbox"/> School Secretary |
| <input type="checkbox"/> Kindergarten teacher | <input type="checkbox"/> Science Teacher |
| <input type="checkbox"/> Math Teacher | <input type="checkbox"/> Substitute Teacher |
| <input type="checkbox"/> Middle School Teacher | <input type="checkbox"/> Teaching Assistant |

Program Educational Objectives (PEOs)

Upon successful completion of a track in the Teacher Education program, students will be able to:

1. Assume leadership roles as qualified teachers and be able to use contemporary theoretical, practical, and ethical knowledge to promote an effective learning experience.
2. Pursue careers in schools, specific to their area of specialty, and specialize in training others with the skills pertaining to their specialty.
3. Demonstrate all the skills needed to pursue a graduate degree, research opportunities and continuing professional development.
4. Make life-long commitment to social responsibility with confidence in their ability to make a difference.

Program Learning Outcomes (PLOs)

Students will have the ability to:

1. Identify the various cognitive, social, emotional, and physical needs of students.
2. Design a classroom environment and curriculum that cater to learners' diversity, developmental stages and abilities.
3. Construct meaningful and collaborative learning experiences to engage learners in critical thinking, problem-solving and creativity through the use of main concepts, methods of inquiry, and structures relevant to the subjects being taught.

4. Use multiple methods of assessments to make instructional decisions and empower learners to develop at their highest capacity.
5. Plan instruction using a variety of instructional strategies and techniques.
6. Assess his/her own performance to effectively meet the needs of each learner, promoting learner growth, development and well-being.

6.6.2 CHED - Bachelor of Education in Early Childhood Education (99 Credits)

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	39
EDIT250 - Educational Technology for Teachers	3
EDUC221 - Introduction to Educational Psychology	3
EDUC281 - Learning & Developmental Theories	3
EDUC321 - Teaching Oral Communication	3
EDUC346 - Introduction to Classroom Management	3
EDUC347 - Teaching of Reading	3
EDUC367 - Language Acquisition	3
EDUC380 - Statistical Research in Education	3
EDUC405 - Methods of Teaching & Testing	3
EDUC440 - Teaching Practicum I	3
ENGL220 - Modern English Grammar	3
ENGL231 - Advanced English Grammar	3
ENGL400 - Phonology	3
Major Requirements	30
EDUC230 - Teaching Arts & Crafts	3
EDUC250 - Physical Education for K - 3 Learners	3
EDUC261 - Music Methods for Home Class Teachers	3
EDUC375 - Introduction to Special Education	3

EDUC423 - Teaching Mathematics and General Sciences for Elementary Teachers	3
EDUC460 - Role of Play in Child Development	3
EDUC490 - Teaching Practicum II	3
ENGL205 - Introduction to English Literature	3
ENGL260 - Children Literature	3
ENGL360 - Introduction to Linguistics	3
General Education Electives	9
GE**** General Education Electives	9
Major Elective	6
ME**** Major Elective	6

List of Major Electives - CHED

Course Title	Cr
EDUC305 - Educational Theories in Guidance and Counseling	3
EDUC316 - Performing Arts	3
EDUC328 - Introduction to Math and General Sciences Curriculum	3
EDUC333 - Methodology of Teaching Arabic	3
EDUC411 - Introduction to the Philosophy of Education	3
ENGL300 - Academic writing	3
ENGL340 - Modern Fiction	3
ENGL410 - Readings in World Literature	3
ENGL470 - Advanced English as a FL Conversation	3
LANG230 - Sign Language	3

6.6.3 TEBC - Bachelor of Education in Teacher Education (Biol. –Chem.) (99 Credits)

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	28
BIOL200 - General Biology I	3
BIOL200L - General Biology I Lab	1
BIOL250 - General Biology II	3
BIOL250L - General Biology II Lab	1
BIOL375 - Plant Physiology	3
BIOL375L - Plant Physiology Lab	1
CHEM200 - General Chemistry	3
CHEM200L - General Chemistry Lab	1
EDIT250 - Educational Technology for Teachers	3
EDUC405 - Methods of Teaching & Testing	3
EDUC411 - Introduction to the Philosophy of Education	3
EDUC440 - Teaching Practicum I	3
Major Requirements	50
BIOC310 - Medical Biochemistry	4
BIOL275 - Cell and Molecular Biology	3
BIOL275L - Cell and Molecular Biology Lab	1
BIOL360 - Human Physiology & Anatomy	4
BIOL365 - Genetics	3
BIOL425 - Immunology	3
CHEM255 - Basic Organic Chemistry	3

CHEM255L - Basic Organic Chemistry Lab	1
CHEM260 - Analytical Chemistry	3
CHEM260L - Analytical Chemistry Lab	1
CHEM310 - Physical Chemistry I	3
EDUC221 - Introduction to Educational Psychology	3
EDUC281 - Learning & Developmental Theories	3
EDUC328 - Introduction to Math and General Sciences Curriculum	3
EDUC346 - Introduction to Classroom Management	3
EDUC380 - Statistical Research in Education	3
EDUC423 - Teaching Mathematics and General Sciences for Elementary Teachers	3
EDUC490 - Teaching Practicum II	3
General Education Electives	3
GE**** General Education Electives	3
Major Elective	3
ME**** Major Elective	3

List of Major Electives - TEBC

Course Title	Cr
EDUC305 - Educational Theories in Guidance and Counseling	3
EDUC375 - Introduction to Special Education	3
EDUC423 - Teaching Mathematics and General Sciences for Elementary Teachers	3
EDUC460 - Role of Play in Child Development	3
LANG230 - Sign Language	3

6.6.4 TEPM - Bachelor of Education in Teacher Education (Phys. – Math.) (99 Credits)

Course Title	Cr
Core Requirements	37
CSCI250 - Introduction to Programming	3
CSCI250L - Introduction to Programming Lab	1
EDIT250 - Educational Technology for Teachers	3
EDUC221 - Introduction to Educational Psychology	3
EDUC281 - Learning & Developmental Theories	3
EDUC328 - Introduction to Math and General Sciences Curriculum	3
EDUC346 - Introduction to Classroom Management	3
EDUC380 - Statistical Research in Education	3
EDUC405 - Methods of Teaching & Testing	3
EDUC411 - Introduction to the Philosophy of Education	3
EDUC423 - Teaching Mathematics and General Sciences for Elementary Teachers	3
EDUC440 - Teaching Practicum I	3
EDUC490 - Teaching Practicum II	3
Major Requirements	38
MATH210 - Calculus II	3
MATH220 - Calculus III	3
MATH225 - Linear Algebra with Applications	3
MATH260 - Discrete Mathematics	3
MATH260L - Discrete Mathematics Lab	1
MATH270 - Ordinary Differential Equations	3
MATH305 - Programming Languages for Scientist	3
MATH310 - Probability & Statistics for Scientists & Engineers	3

MATH345 - Introduction to Real Analysis	3
MATH492 - Mathematical Seminar	1
PHYS210 - Mechanics	3
PHYS250 - Thermodynamic and Waves	3
PHYS280 - Electricity and Magnetism	3
PHYS340 - Modern Physics	3
General Education Electives	18
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
GE***** General Education Electives	3
Major Elective	6
ME***** Major Elective	6

List of Major Electives - TEPM

Course Title	Cr
EDUC305 - Educational Theories in Guidance and Counseling	3
EDUC375 - Introduction to Special Education	3
EDUC421 - Teaching Mathematics for Elementary Teachers	3
EDUC460 - Role of Play in Child Development	3
LANG230 - Sign Language	3

6.6.5 TESL - Bachelor of Education in Teaching English as a Second Language (99 Credits)

About the Program

The Teaching English as a Second Language Program can help prepare preservice teachers for a rewarding career in teaching. The program provides activities that promote both the cognitive and social skills of students. The student can earn a Bachelor's degree in three years and acquire authentic teaching experience through hands-on learning approaches and various real-life activities.

The mission of the Teaching English as a Second Language undergraduate program is to provide preservice teachers with rigorous and personally meaningful experiences that cultivate creative and critical understandings related to the processes of teaching and learning the English language through philosophical, theoretical, technological and instructional frameworks which foster exemplary inclusive practice and scholarly inquiry across diverse educational contexts.

Career Opportunities

Most of the graduates of this program find employment as:

1. English teachers for Kids & Teens
2. English Teachers for Kids Online
3. English Teachers for Adults
4. English Teachers for Online Centers

Program Educational Objectives (PEOs)

Upon successful completion of the Teaching English to Speakers of Other Languages (TESOL) program, students will be able to:

1. Assume leadership roles as qualified teachers of English language and be able to use contemporary theoretical, practical, and ethical knowledge to promote an effective learning experience.
2. Pursue careers in schools, specific to teaching English, and specialize in training others with the skills pertaining to TESOL.

3. Demonstrate all the skills needed to pursue a graduate degree, research opportunities and continuing professional development.
4. Make life-long commitment to social responsibility with confidence in their ability to make a difference.

Program Learning Outcomes (PLOs)

Students will have the ability to:

1. Identify the various cognitive, social, emotional, physical and linguistic needs of students.
2. Design a classroom environment and curriculum that cater to learners' diversity, developmental stages and abilities.
3. Construct meaningful and collaborative learning experiences to engage learners in critical thinking, problem-solving and creativity through the use of main concepts, methods of inquiry, and structures relevant to the theme being taught.
4. Use multiple methods of assessments to make instructional decisions and empower learners to develop at their highest capacity.
5. Apply his/her understanding of language variations, first and second language acquisition, and the development of bilingualism/multilingualism in planning lessons.
6. Assess his/her own performance to effectively meet the needs of each learner, promoting learner growth, development and well-being.
7. Demonstrate proficiency in spoken and written English, understanding the nature and structure of the language (phonology, morphology, syntax, semantics, pragmatics, and discourse).

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	36
EDIT250 - Educational Technology for Teachers	3
EDUC221 - Introduction to Educational Psychology	3
EDUC281 - Learning & Developmental Theories	3
EDUC321 - Teaching Oral Communication	3
EDUC346 - Introduction to Classroom Management	3
EDUC347 - Teaching of Reading	3
EDUC367 - Language Acquisition	3
EDUC380 - Statistical Research in Education	3
EDUC405 - Methods of Teaching & Testing	3
EDUC440 - Teaching Practicum I	3
ENGL340 - Modern Fiction	3
ENGL400 - Phonology	3
Major Requirements	33
EDUC375 - Introduction to Special Education	3
EDUC490 - Teaching Practicum II	3
ENGL205 - Introduction to English Literature	3
ENGL220 - Modern English Grammar	3
ENGL231 - Advanced English Grammar	3
ENGL260 - Children Literature	3

ENGL300 - Academic writing	3
ENGL360 - Introduction to Linguistics	3
ENGL381 - English Syntax for TESL Teachers	3
ENGL410 - Readings in World Literature	3
ENGL470 - Advanced English as a FL Conversation	3
General Education Electives	9
GE***** General Education Electives	9
Major Elective	6
ME***** Major Elective	6

List of Major Electives - TESL

Course Title	Cr
EDUC230 - Teaching Arts & Crafts	3
EDUC250 - Physical Education for K - 3 Learners	3
EDUC305 - Educational Theories in Guidance and Counseling	3
EDUC390 - Introducing the Montessori Approach to Early Years Practices	3
EDUC411 - Introduction to the Philosophy of Education	3
EDUC423 - Teaching Mathematics and General Sciences for Elementary Teachers	3
EDUC460 - Role of Play in Child Development	3
LANG230 - Sign Language	3

6.6.6 TRNS - Bachelor of Translation and Interpretation (108 Credits)

About the program

The Translation Program raises student awareness about the importance of conveying the correct message of a text while preserving the author's voice and style. It cultivates students' appreciation of the cultural backgrounds of the source and target languages as well as provides students with practical experience in the use of computer and electronic translation tools. Moreover, it helps students improve their command of English, Arabic, and French (optional) by developing their lexical repertoire and polishing their writing style.

The BA in Translation Program at LIU (English/Arabic; Arabic/English) prepares ethical and professional translators to fulfill market needs. The program instructs students in the art of written English/Arabic, Arabic/English translation, offers the option of translating from and into French, and trains students to accurately reproduce cultural, economic, legal, and technical texts in these languages.

Career Opportunities

Most of the graduates of this program find employment as:

- | | |
|---|---|
| <input type="checkbox"/> Community interpreters | <input type="checkbox"/> Legal or judicial interpreters and translators |
| <input type="checkbox"/> Conference interpreters | <input type="checkbox"/> Liaison interpreters |
| <input type="checkbox"/> Coordinating interpreters | <input type="checkbox"/> Literary interpreters |
| <input type="checkbox"/> Educational interpreters | <input type="checkbox"/> Literary translators |
| <input type="checkbox"/> Escort interpreters | <input type="checkbox"/> Localization translators |
| <input type="checkbox"/> Federal court interpreters | <input type="checkbox"/> Medical interpreters and translators |
| <input type="checkbox"/> Foreign language interpreters and translators | <input type="checkbox"/> Sign language interpreters |
| <input type="checkbox"/> Health or medical interpreters and translators | <input type="checkbox"/> Simultaneous interpreters |
| <input type="checkbox"/> Healthcare interpreters and translators | <input type="checkbox"/> State court interpreters |
| <input type="checkbox"/> Judiciary interpreters and translators | <input type="checkbox"/> Translators |
| | <input type="checkbox"/> Trilingual interpreters |

Program Educational Objectives (PEO)

Upon successful completion of a track in the Translation program, students will be able to:

1. provide students with a good command of translation theories and methodologies.
2. graduate ethical and professional translators capable of translating different cultural, economic, legal, and technical genres of texts.
3. equip students with research and critical thinking skills to produce accurate research-based translations that address textual demands.
4. graduate students who are ready to pursue postgraduate studies and/or assume translation jobs in reputable institutions or organizations.

Program Learning Outcomes (PLO)

Students will have the ability to:

1. Compare translation theories and methodologies.
2. Generate ethical and professional translations of different cultural, economic, legal, and technical genres of texts.
3. Apply technological tools to facilitate translation.
4. Determine the author's voice, style, and culture in the target text.
5. Apply ethical and professional translation strategies in real life settings.

Curriculum

Course Title	Cr
General Education Requirements	15
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
Core Requirements	42
ARAB255 - Technical Writing: Arabic	3
ARAB265 - Editing & Proofreading: Arabic	3
ENGL305 - Technical Writing: English	3
ENGL360 - Introduction to Linguistics	3
ENGL415 - Editing & Proofreading: English	3
FREN301 - Intermediate French: A2-2	3
FREN315 - Intermediate French: A2-3	3
FREN365 - Upper French: B1-1	3
FREN375 - Upper French: B1-2	3
FREN415 - Upper French: B1-3 __ DELF B1	3
FREN485 - Upper French: B2- FLE	3
LANG223 - Introduction To Spanish	3
SPAN250 - Spanish level 2	3

SPAN300 - Spanish level 3	3
Major Requirements	48
TRNS300 - Introduction to Translation EN-AR	3
TRNS305 - Introduction to Translation AR-EN	3
TRNS350 - Media Translation	3
TRNS355 - Scientific and Technical Translation	3
TRNS375 - General Translation III: Introduction to Translation FR-AR	3
TRNS380 - On-Sight Interpretation	3
TRNS385 - Translation of UN Documents	3
TRNS400 - Economic Translation	3
TRNS410 - Medical Translation	3
TRNS415 - Translation of Legal & Official Documents	3
TRNS420 - Consecutive Interpretation	3
TRNS431 - Simultaneous Interpretation	3
TRNS445 - Literary Translation	3
TRNS470 - Translation Senior Project	3
TRNS480 - Introduction to Translation Studies	3
TRNS485 - Translation of Various Domains FR-AR/ AR-FR	3
General Education Electives	3
LANG230 - Sign Language	3

6.7 Program of Study – Graduate program

6.7.1 TDED - Teaching Diploma in Education (24 Credits)

The Teaching Diploma program can help prepare graduates of various majors for a rewarding career in teaching in their area of specialty. The Teaching Diploma program focuses on practical teaching experience, both school-based and within a micro-teaching setting. It integrates recent research-based knowledge and effective learning and teaching techniques into classroom management strategies and the use of educational technology. Students are equipped with the skills to plan, design, critically review and implement a curriculum for diverse learning environments.

The mission of the Teaching Diploma Program is to prepare highly qualified educators equipped with research-based strategies and techniques to implement in an effective teaching and learning diverse environments and continuously self-improve to plan, design, critically review and implement a curriculum.

Career Opportunities

- | | |
|---|--|
| <input type="checkbox"/> Department of Education professional | <input type="checkbox"/> Special Education Teachers |
| <input type="checkbox"/> Assistant Principal | <input type="checkbox"/> Education Policy Researcher |
| <input type="checkbox"/> Principal | <input type="checkbox"/> Textbook sales representative |
| <input type="checkbox"/> Think tank associate | <input type="checkbox"/> Blogger |
| <input type="checkbox"/> Instructional Coordinators | <input type="checkbox"/> Reporter |
| <input type="checkbox"/> Secondary School Teachers | |

Program Educational Objectives (PEOs)

Upon successful completion of a track in the Teacher Education program, students will be able to:

1. Assume leadership roles as qualified teachers who are able to build on existing knowledge in their area of specialization in order to promote an effective learning experience.
2. Pursue careers in schools, specific to their area of specialty, and specialize in training others with the skills pertaining to their specialty.
3. Demonstrate all the skills needed to pursue a graduate degree, research opportunities and continuing professional development.
4. Make life-long commitment to social responsibility with confidence in their ability to make a difference.

Program Learning Outcomes (PLOs)

Students will have the ability to:

1. Identify the various cognitive, social, emotional, and physical needs of students.
2. Design a classroom environment that caters for learners' diversity, developmental stages, and abilities.
3. Construct meaningful and collaborative learning experiences to engage learners in critical thinking, problem-solving, and creativity.
4. Use multiple methods of assessments to make instructional decisions and empower learners to develop at their highest potential.
5. Plan instruction using knowledge of their area of specialization, coupled with a variety of instructional strategies and techniques.
6. Assess his/her own performance to effectively meet the needs of each learner, promoting learner growth, development, and well-being.

Curriculum

Course Title	Cr
Major Requirements	21
EDUC511 - Classroom Dynamics	3
EDUC520 - Philosophy of Education	3
EDUC561 - Educational Media and Technology	3
EDUC565 - Assessment & Evaluation	3
EDUC600 - Curriculum Design & Evaluation	3
EDUC660 - Teaching Practices	3
EDUC667 - Counseling: Theory and Practice	3
Major Elective	3
ME**** Major Elective	3

List of Major Electives - TDED

Course Title	Cr
EDUC556 - Advanced Methods of Teaching Humanities and Language	3
EDUC557 - Advanced Methods of Teaching Math and Science	3

6.7.2 ELMM - Masters of Education in Educational Management (39 Credits)

About the program

A Master of Education (M.Ed.) in Educational Management prepares students for leadership positions in diverse settings through didactic courses and hands-on training experiences. Students reflect critically on and evaluate their experiences, performance and progress, and they transfer and apply skills and knowledge to different contexts. The program enables students to develop the professional skills, knowledge and attitudes that are necessary to become competent school leaders and managers.

The mission of the program is to enhance practical functioning and improvement of both teaching and learning in a school environment through the effective binding of administrative tools under the guidance of transformational leadership.

Career Opportunities

- Director or administrative staff for an English as a second language (ESL) program
- Developer of English language materials with a private company
- Academic adviser with an educational institution
- Government agency adviser
- Private language arts tutor
- Administrative or teaching staff at an English language center

Program Educational Objectives (PEO)

The program will prepare students to:

1. Pursue higher studies towards a doctoral degree.
2. Conduct research in their concentration areas to advance their professional career.
3. Pursue career positions in organizations that deal with education and educational issues.
4. Further develop their professional status through the use of their learned skills in analytical and creative thinking, research, and the use of technology in pedagogy.
5. Evaluate proposed policies in the field of education and pedagogy for the betterment of their communities.

Program Learning Outcomes (PLO)

Upon graduation, students should be able to:

1. Utilize their acquired knowledge and skills to enroll in post-graduate programs.
2. Implement the current theories of education to their careers.
3. Contribute to educational research.
4. Demonstrate advanced understanding of learning theory and methodologies.
5. Analyze the issues in current education practices in Lebanon and the region.
6. Demonstrate commitment to professional ethical conduct.

Curriculum

Course Title	Cr
Core Requirements	21
EDUC511 - Classroom Dynamics	3
EDUC520 - Philosophy of Education	3
EDUC551 - Research Methodology & Dissertation Preparation	3
EDUC561 - Educational Media and Technology	3
EDUC565 - Assessment & Evaluation	3
EDUC600 - Curriculum Design & Evaluation	3
EDUC667 - Counseling: Theory and Practice	3
Major Requirements	15
EDUC575 - Personnel and Human Resource Management	3
EDUC580 - Practicum in Educational Management & Leadership	3
EDUC640 - Strategic Planning in Education	3
EDUC695 - Graduate Research Thesis	6
Major Elective	3
ME**** Major Elective	3

List of Major Electives - ELMM

Course Title	Cr
EDUC540 - Sociology of Education	3
EDUC567 - Assessment and Evaluation with Exceptionalities	3
EDUC660 - Teaching Practices	3
EDUC666 - Program Models for Gifted Learners	3
EDUC670 - Educational Policies & Development	3
EDUC673 - Differentiating Instruction in Inclusive Classrooms	3
EDUC675 - Human Development & Education	3
EDUC677 - International Education Administration & Policy Analysis	3
EDUC682 - Introduction to organization analysis in education	3

6.7.3 EDUM - Masters of Education in Teaching English as a Second Language (39 Credits)

About the program

A Masters of Education in Teaching English as a Foreign Language Program prepares students to have deeper knowledge of the English language. Degree holders are equipped with the analytical and conceptual tools for further graduate study in English, or for a career in foreign language teaching, program administration, and communication. Graduate students receive advanced preparation in language theory while also developing the interpersonal skills essential for instructions to ESL students.

The mission of the program is to pursue linguistic and content in analyzing and enhancing critical thinking of selections and literary works in English through the medium of Education.

Career Opportunities

- Coordinating activities within a school/school system
- Selecting and evaluating standardized tests
- Designing the curriculum
- Overseeing education programs
- Creating and enforcing disciplinary measures
- Connecting with parents, faculty, and students
- community education directors
- business managers
- school system superintendents
- curriculum coordinators
- administrators at post-secondary schools

Program Educational Objectives (PEO)

The program will prepare students to:

1. Master concepts related to the process of foreign language acquisition and language learning in order to pursue a career in English language teaching, program administration, and communication.
2. Build on their academic and professional experiences to make the link between linguistic theory and actual practice.
3. Become researchers and reflect on Applied Linguistics as an academic field of inquiry.
4. Contribute to the enhancement of society through applying their ethical and moral knowledge and standards.

Program Learning Outcomes (PLO)

Upon graduation, students should be able to:

1. Apply leading theories of second language learning and acquisition.
2. Analyze their academic and professional experiences in light of the theories and latest trends in the field of second language acquisition.
3. Demonstrate the application of pedagogical skills in writing instructional objectives, effectively planning classroom instruction, developing teaching material, and assessing the teaching-learning process.
4. Plan research studies, collect and analyze data, and draw theoretical and practical conclusions, using appropriate tools and methods.
5. Construct a code of ethics to guide their professional and personal lives.

Curriculum

Course Title	Cr
Core Requirements	21
EDUC511 - Classroom Dynamics	3
EDUC520 - Philosophy of Education	3
EDUC551 - Research Methodology & Dissertation Preparation	3
EDUC561 - Educational Media and Technology	3
EDUC565 - Assessment & Evaluation	3
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EDUC631 - Content Area Education for TESL Students	3
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List of Major Electives - EDUM

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EDUC640 - Strategic Planning in Education	3
EDUC660 - Teaching Practices	3
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EDUC677 - International Education Administration & Policy Analysis	3
EDUC682 - Introduction to organization analysis in education	3
EDUC692 - Independent Studies	3

6.8 General Education Electives – School of Education

Code	Course Title	Cr
AGRS235	Landscape Horticulture	3
ARAB220	Creative Writing in Arabic	3
ARTS200	Foundation Drawing I	3
ARTS204	Introduction to Theater	3
ARTS350	Photography	3
ARTS390	Mosaic I	3
BHTM315	Business Etiquette & Protocol	3
BHTM375	International Cuisine	3
BMED210	Introduction to Community Health	3
COMM200	Introduction to Communication Studies	3
COMM225	Workshop	3
COMM255	Theories of Mass Media	3
CULT210	New World Order	3
EDUC201	Foundation of Education	3
ENVR200	Environmental Science	3
ENVR205	Environment & Health	3
ENVR320-	Global Health Challenges	3
FREN200	Elementary French	3
HIST200	Modern Japan	3
HIST205	Modern China	3
HIST245	Modern Africa	3
HIST250	Europe in the Twentieth Century	3
HIST255	International Relations in East Asia Since 1945	3
HIST260	Modern Spain	3
HIST270	Modern Latin America	3
HIST350	Contemporary World History	3
HUMN200	Community Service	3
HUMN210	Human Rights - Global Perspective	3
HUMN215	Introduction to Civic Society	3
INET01	Innovative and Entrepreneurship Startup Essentials	3
LANG200	Beginners Russian	3
LANG201	Beginners Hebrew	3
LANG212	Conversational Hebrew	3
LANG221	Introduction To Italian	3
LANG222	Introduction To French	3
LANG223	Introduction To Spanish	3
LANG224	Introduction To Deutsch	3
LANG225	Introduction To German	3
LANG227	Introduction To Chinese	3
LANG228	Introduction To Persian	3
LANG229	Introduction to Turkish	3
LANG300	Intermediate Russian	3
NSCI200	The Universe and the Earth	3
NSCI210	Biodiversity and the Evolution of Life	3
NSCI270	Environmental Ethics	3
NUTR200	Nutrition and Health	3
PHED200	Sports and Health	3
PHIL200	Introduction to Philosophy	3
PHIL205	Introduction to Ethics	3
PHIL210	World Religions	3
POLS200	Introduction to Political Sciences	3
POLS205	World Current Affairs	3
POLS215	Modern Arab Political Thought	3
POLS230	Lebanese Labor Law	3
POLS300	Lebanese Politics	3
POLS316	Politics of Modern Syria	3
POLS440	The Arab Israeli Conflict	3
RATV200	Short Film Making	3
SES201	Soft & Entrepreneurship Skills Development	3
SPAN250	Spanish level 2	3
SSCI200	Introduction to Sociology	3
SSCI205	Introduction to Psychology	3
SSCI210	International Politics	3
SSCI215	Introduction to Music	3
SSCI220	Introduction to Anthropology	3
SSCI225	Introduction to Cultural Anthropology	3
SSCI235	The Individual and Modernity	3

SSCI250	The Cultural Landscape	3
SSCI255	Intellectual History of the Twentieth Century	3
SSCI265	Geography of the Islamic World	3
SSCI285	Gender and Global Issues	3
SSCI310	Foundations of the Social Sciences	3
SSCI400	Global Understanding	3

6.9 Course Description – School of Education

ARAB200 Arabic Language and Literature (3 credits)

This course is a comprehensive review of Arabic Grammar, Syntax, major literature and poetry styles, formal and business letters.

CULT200 Introduction to Arab - Islamic Civilization (3 credits)

The purpose of this course is to acquaint students with the history and achievements of the Islamic civilization. Themes will include patterns of the political and spiritual leadership; cultural, artistic, and intellectual accomplishments
Prerequisites: ENGL051, ENGL101, ENGL151.

EDIT250 Educational Technology for Teachers (3 credits)

This course provides an overview of old and new technologies and media devices that can be used for instructional purposes. Students will learn how to use these technologies as facilitators for learning, and the need for reform in educational systems.

EDUC221 Introduction to Educational Psychology (3 credits)

This course gives an overview of what teaching is all about. More specifically, it helps students become more productive members of society. The course focuses on the variety roles of teachers, including subject matter experts, tutors, consultants, motivators, behavior managers, confidantes, evaluators. Students will get an opportunity to learn how to make appropriate decisions and choose among many possible strategies that help them learn, develop and achieve.

EDUC230 Teaching Arts & Crafts (3 credits)

This is a hands-on course that provides teachers a bank of activities to apply in their classes. Students will get the chance to discover, enjoy, and appreciate art and, at the same time, use art as a means of communication and expression. During the course, students will explore and manipulate different materials and tools and discuss the appropriateness of using each and every material in connection with the curriculum objectives.

EDUC250 Physical Education for K - 3 Learners (3 credits)

This course is designed to show the theoretical and practical linkage between physical development and all other aspects of development. The course will engage students in designing a balanced PE curriculum that integrates with all other content area subjects. During the course, students are directed to value the significance of planning (especially collaborative planning, whenever appropriate) between the teachers of consecutive KG classes.

EDUC261 Music Methods for Home Class Teachers (3 credits)

This course is designed to show the theoretical and practical linkage between Music development and all other aspects of development. The course will engage students in designing a balanced Music curriculum that integrates with all other content area subjects. During the course, students are directed to value the significance of planning (especially collaborative planning, whenever appropriate) between the teachers of consecutive KG classes.

EDUC281 Learning & Developmental Theories (3 credits)

This course introduces major developmental theories of learning, with emphasis on basic concepts in cognitive development. Relative influences of heredity and environment, and the impact of development on learning and school success are examined.

EDUC305 Educational Theories in Guidance and Counseling (3 credits)

This course introduces students to major counseling theories in education. Emphasis is on understanding the nature of counseling and the teacher's role as a psychology educator in class. Students will learn how to provide group counseling to students with special educational and psychological needs. In addition, students will be exposed to intervention techniques that will assist them in dealing with a wide range of educational issues in school.

EDUC321 Teaching Oral Communication (3 credits)

This course presents theories and methods for the development of listening and speaking skills, including a variety of instructional strategies, activities, and material for teaching pronunciation, speaking, and listening. This course focuses on effective ways to facilitate oral communication practice in a variety of group and cooperative learning formats.

EDUC328 Introduction to Math and General Sciences Curriculum (3 credits)

Introduction to Math and General Sciences Curriculum

EDUC333 Methodology of Teaching Arabic (3 credits)

Theory and practice in methods of teaching Arabic in elementary schools with observation and practice teaching in classrooms.

EDUC346 Introduction to Classroom Management (3 credits)

This course examines the role of teacher in a classroom situation: teacher – student interaction, and variation in classroom activities. The aim of the course is to pinpoint the crucial role of the teacher in establishing a proactive classroom environment where students stay on task.

EDUC347 Teaching of Reading (3 credits)

This course focuses on different methods of teaching reading. Students will have the opportunity to examine new theories, research and techniques of reading, and will learn how to integrate language arts across the curriculum. In addition, the course introduces students briefly (instead of exposing them) to instructional software devices, and specific reading techniques that could be used when teaching challenged students, and children with special needs.

EDUC375 Introduction to Special Education (3 credits)

This course emphasizes the importance of identification of characteristics of individuals with difficulties and the impact of the characteristics on the learner and family members. The course is a study of the nature, psychosocial, and educational needs of individuals across the lifespan with physical, mental, emotional, __sensory differences. Particular attention is placed on designing appropriate Individual Educational Programs to ensure students success in class.

EDUC380 Statistical Research in Education (3 credits)

This course introduces basic sources and techniques of educational and linguistic research. It is designed to help students in writing research papers using electronic sources and equipment. Students will gain practical knowledge in identifying and researching topics relevant to their field of study, reviewing literature, collecting and analysing data, reporting results and discussing the findings. It also deals with the research designs and with solving educational problems

EDUC390 Introducing the Montessori Approach to Early Years Practices (3 credits)

This course focuses upon principles of learning, development and motivation, and how these principles could be implemented in classrooms. Students will be prepared to apply principles in understanding how elementary and secondary school students learn, and in making sense of what they do and say in classrooms

EDUC405 Methods of Teaching & Testing (3 credits)

This is an introductory course for future classroom teachers. The course will emphasize translation from theory into practice. Students will be exposed to various methods of teaching and testing. They will get the opportunity to design a lesson plan and construct tests.

EDUC411 Introduction to the Philosophy of Education (3 credits)

This course will provide students with an opportunity to consider a variety of educational issues from a philosophical perspective. The course will explore general questions such as: What is the ultimate goal of education? How is education different from social indoctrination? Should education aim at making good citizens? What should be taught and what is the most effective way to teach it? These and other questions will examine and attempt to answer social, political, philosophical, democratic, progressive, traditional and moral theories then and now.

EDUC421 Teaching Mathematics for Elementary Teachers (3 credits)

This course gives the students the opportunity to design, manipulate and examine games and activities that trigger students critical thinking. Math integration and assessment will also be addressed to enhance the use of mathematical thinking and skills across the curriculum. In addition, students will be guided to establish a classroom environment that enhances: the construction of mathematical knowledge, the enjoyment of math, and students' active learning to become thinkers and problem solvers.

EDUC490 Teaching Practicum II (3 credits)

This course is designed to provide pre-service student-teachers with the opportunity to acquire skills for effective planning, implementing, and evaluating instruction in a field-based setting. More specifically, students get opportunities

of guided practice to teach under the supervision of an expert teacher. This practice teaching experience will develop the student's self-confidence, security and commitment to teaching.

EDUC511 Classroom Dynamics (3 credits)

This course focuses on a wealth of information about classroom management strategies that successful teachers use to lead students to be on task and engaged in lessons. Theory and practice of classroom management: organization of physical facilities, grouping strategies, and general routine; student control and classroom climate for the individual and for the group; child development; and understanding the stages of development and counseling are examined.

EDUC520 Philosophy of Education (3 credits)

The course is a seminar that overviews the development of educational thought and practice through primary sources. Selected problems and representative thinkers from various periods will be examined with special emphasis on contemporary educational practices. The course focuses on the relation of philosophies of education to broader social, political, and moral theories.

EDUC540 Sociology of Education (3 credits)

This course examines common problems facing educational systems around the world as the result of global economic, social, and cultural forces. Issues related to structures and processes related to educational change, will be analyzed in specific regional, national and local contexts.

EDUC551 Research Methodology & Dissertation Preparation (3 credits)

The aim of the course is to provide comprehensive understanding of the diverse research methods used in the Social Sciences, and to convey the necessary practical skills required for their application. Through lectures, and discussions, the course will provide students with relevant knowledge of major research methods, their respective uses and usefulness, and their relevance for the study of contemporary Social Science research issues. The course begins with an introduction to research design, encompassing both qualitative and quantitative research methods and their uses, seen in relation to the question of validity. Students will be required to study a Social Science problem, applying their knowledge and skills to this problem throughout the course. Techniques for data collection and analyses of interviews, questionnaires, observation, and database material will be discussed. Development of the skills required for both written and oral dissemination of results is also a key feature of this course."

EDUC556 Advanced Methods of Teaching Humanities and Language (3 credits)

The course provides an overview of current approaches, issues and practices in the teaching of English to Speakers of Other Languages. The course provides graduate students with a wide sources of teaching principles and classroom activities which teachers can refer to in their own work. The course begins with an introduction to different theoretical perspectives on language teaching and then moves to more practical issues such as teaching the different language skills, syllabus design and materials development, role of technology in the language classroom.

EDUC557 Advanced Methods of Teaching Math and Science (3 credits)

The course focuses on current theories of teaching. It presents a practical and applied approach to a broad range of instructional methods and techniques that will help all teachers—novice and experienced—succeed in today's complex classrooms. The course begins with an introduction to different theoretical perspectives on teaching and learning and then moves quickly to more practical aspects related to science teaching such as purpose behind science teaching, planning for active learning, teaching techniques, managing the science learning environment and assessing students' science learning.

EDUC561 Educational Media and Technology (3 credits)

This course includes an examination of technology integration techniques using various application tools, instructional software, productivity software, and the Internet. Students will be prepared to identify relative advantages of learning with technology, design and deliver instruction through technology, and meld various media with methods to improve teaching-learning processes.

EDUC565 Assessment & Evaluation (3 credits)

Students will be exposed to major concepts in assessment such as: reliability, validity, and bias. They will have an opportunity to practice construction of teacher-made tests, treatment of scores, and assignment of grades.

EDUC567 Assessment and Evaluation with Exceptionalities (3 credits)

An in-depth study of theoretical principles of measurement, assessment, and evaluation necessary for appropriate identification of needs, as related to implementation of educational plans for infants, children, and youth with exceptionalities. Applications of assessment data in instructional programs for children with exceptionalities are introduced. Students complete 4 hours of assessments and evaluations of infants, children, youths, and young adults with exceptionalities, as part of the course. Students will be introduced to Batteries of assessment tools in the field of special

education. They will be conducting site visits to schools and centers to observe and assess learners (age range 4 - 14 years old).

EDUC575 Personnel and Human Resource Management (3 credits)

Concepts and approaches for planning and implementing activities for effective human resource management will be explored. Current theories and practices relating to recruitment, development, and appraisal of personnel will be covered. The course will examine specific personnel functions such as recruitment, selection, retention, and evaluation. Additional topics include conflict resolution, effective communication skills, managing the change process, and creating and maintaining a positive school environment. Special attention will be given to evaluation strategies, measuring results, and designing training and developing programs for faculty and staff.

EDUC580 Practicum in Educational Management & Leadership (3 credits)

A 60-hour supervised field experience in school leadership. This practicum course aims at developing capabilities and skills of students related to the design, promotion and delivery of educational programs. Students will learn more about best practices in initiating, developing, organizing, coordinating and streamlining educational management processes and methodologies used to overcome problems in educational management and leadership. Permission is required.

EDUC600 Curriculum Design & Evaluation (3 credits)

The course promotes the identification of curriculum issues in the field of education and encourages students to develop effective curriculum models to meet the challenge of implementing an instructional program in today's multicultural and diverse educational system. A comprehensive analysis of the process of curriculum development is presented through a thorough examination of its theoretical dimensions. The relationship between curriculum, assessment and instruction is then explored enabling students to research various curriculum models and pedagogies and demonstrate methods of evaluating instructions and curricula.

EDUC610 Applied Linguistics (3 credits)

The course exposes students to language and language use as well as essential issues like: First and Second Language Acquisition, teaching methodologies, psycholinguistics, sociolinguistics, bilingualism and language dialects, learning styles and strategies, language variations, and the four language skills: Listening, speaking, reading and writing.

EDUC631 Content Area Education for TESL Students (3 credits)

This course examines existing research and its pedagogical implications for promoting reading comprehension, metacognition, and motivation. Students are given the opportunity to combine their personal knowledge and experience with print information to construct meaning as they read. Instructional strategies such as activating students' background knowledge, teaching how to use text structures can help students become independent navigators of text.

EDUC640 Strategic Planning in Education (3 credits)

This course focuses on the processes of implementing district-wide curriculum programs and other innovations in school systems. It provides students with the methods and techniques for restructuring education and the operational perspectives of planning in modern organizations. Students will become familiar with recent research on implementation of change in curriculum and instruction, trends in education, strategic and contextual planning, authentic assessment, and national curriculum projects.

EDUC646 Literacy and Language Development (3 credits)

The purpose of this course is to focus on the research on emergent and early literacy development so that teachers may construct well-designed, appropriate literacy learning environments and experiences for young language learners. Because this is an advanced course, students will be expected to have a reading background in early literacy. This course is required for the Reading Specialist Endorsement.

EDUC660 Teaching Practices (3 credits)

This course examines pedagogical principles and practices of teaching. It provides practice teachers with realistic information, strategies, and practices related to teaching students today. The course cites important basic skills and issues that students need to consider during their practice, such as planning, classroom organization, behavior management and assessment.

EDUC666 Program Models for Gifted Learners (3 credits)

Program Models provide the students with a theoretical framework within which specific enrichment activities may be added to the curriculum. This course focuses on 10 Models that are quite consistent and complementary, permitting teachers to design and implement within the curriculum of gifted and talented students.

EDUC667 Counseling: Theory and Practice (3 credits)

This course is designed to focus on major theories of counseling and practices in the behavior change process. It surveys selected approaches in behavior management, therapy and counseling. Real life issues and concerns in counseling and behavior change will be discussed.

EDUC670 Educational Policies & Development (3 credits)

This course presents an overview of major classical and contemporary theoretical perspectives to understanding educational systems. These theoretical perspectives provide explanations for why things are the way they are in educational systems. Students will understand the meanings assigned to “education” and “politics” through two main variables: functions of politics-education interaction and strategies employed by political groups and by professional educators to carry out these functions.

EDUC673 Differentiating Instruction in Inclusive Classrooms (3 credits)

Emphasis is based on the Study of characteristics, identification, and assessment of exceptional children and youth across age ranges and levels of severity, including individualizing instruction in inclusive classrooms. "Best" teaching practices for this population will be examined.

EDUC675 Human Development & Education (3 credits)

The course examines major contemporary theories of human development, both cognitive and affective, and their application to education. The course treats controversial issues with an integrative approach, including experiences designed to enhance understanding of development in infants, children, adolescents, and adults. The course highlights the life span perspective on development and the interacting contributions of biology and environment to the developing person.

EDUC677 International Education Administration & Policy Analysis (3 credits)

This course combines study in International and Comparative Education (ICE) with academic work in educational administration and policy analysis in international and comparative contexts. A major research project on a topic of their choosing is required of all students.

EDUC682 Introduction to organization analysis in education (3 credits)

This course draws on concepts and propositions from organization theory to help students construct and analyze case studies of schools and school systems and develop action plans for organizational change, reform, and renewal. Special focus is placed on theories of bureaucracy and community; organizational structure, culture, and politics; professional learning communities; and strategic learning organization.

EDUC692 Independent Studies (3 credits)

This is an independent course that is usually an application of what has been learned to real world problems or concerns. Working papers. The course is to be supervised by one faculty member.

EDUC695 Graduate Research Thesis (6 credits)

This is an independent graduate research with the supervision of a faculty member. Documented work is to be “defended” at the end before a committee.

ENGL101 Introduction to Oral and Written Skills (7 credits)

In the course of Communication Skills and Reading/Writing, students build on the strong foundation achieved in the integrated skills classes. At these levels students develop strong reading skills to increase reading speed, comprehension, and vocabulary. In writing, students learn how to compose essays in different rhetorical modes. Communication skills are refined to the point that students are able to discuss topics and make oral presentations.

ENGL151 Advanced Writing Skills (6 credits)

In this course students are exposed to materials/assignments which equip them with the skills necessary for success in the college/university environment. In these levels students are expected to understand and take notes on lectures, participate in discussions, make presentations, do library research, write research papers, and read sources related to their fields of study. At these advanced levels, students have the opportunity to take concurrent university classes for audit or credit.

ENGL201 Composition and Research Skills (3 credits)

This course focuses on the development of writing skills appropriate to specific academic and professional purposes; the analysis and practice of various methods of organization and rhetorical patterns used in formal expository and persuasive writing; the refinement of critical reading strategies and library research techniques; and the completion of an academically acceptable library research paper. Prerequisites: ENGL150, ENGL151.

ENGL205 Introduction to English Literature (3 credits)

This course develops students' understanding of the elements of literature, including character, theme, points of view, symbol, imagery, tone and rhythm. Reading selections include short fiction, poetry and drama. The course emphasizes on the students' appreciation of literature as an art form and their analytical response and interpretation on what they read. The works introduce the student to the study of Literature in three basic approaches: Reading, Responding and Writing.

ENGL220 Modern English Grammar (3 credits)

A Communicative Grammar of English is a fresh departure in grammar writing in that it employs a communicative rather than a structural approach. The main part of the course answers the question 'How can I use grammar to communicate'. Thus the main part of the course is devoted to the uses of grammar, rather than to grammatical structure. The course explores the usage problems associated with contemporary grammar in both speaking and writing. Students will be provided with a system of principles and rules that allow them to organize words and sentences into coherent, meaningful language. The course also focuses on the three fundamental issues underlying all errors of grammatical usage: the notion of Standard English, the effects of language change on English grammar, and the effects of language attitudes on our ideas of "correct" English.

ENGL251 Communication Skills (3 credits)

The objectives of this course are to improve students' writing skills for academic purposes by developing effective use of grammatical structures; analytical and critical reading skills; a sensitivity to rhetorical situation, style, and level of diction in academic reading and writing; and competence in using various methods of organization used in formal writing.

ENGL260 Children Literature (3 credits)

This course is designed to introduce students to the spectrum of children's literature and to focus on its different aspects – such a genre, theme, composition, and characterization – from different points of view: historical, social, and communicative, but on top of that aesthetic. A number of different analytical tools taken from contemporary literary theories will be applied to a number of children's literature

ENGL300 Academic writing (3 credits)

The purpose of this course is to familiarize students of Education with the conventions of academic writing. The course will provide students with the opportunity to improve their writing skills as well as their critical reading, critical thinking and research skills. The focus will be on building effective writing skills in general and argumentative writing in particular through reflecting on readings from different genres. Students will articulate their well founded arguments by writing argumentative essays in addition to article, book as well as movie critiques. Finally, the course will stress on the writing process: planning, drafting, revising, editing and self assessment along with effective critiquing and collaborating.

ENGL340 Modern Fiction (3 credits)

This course examines a developing international literary culture from the early twentieth century to the mid-1950s through a close study of selected works by several significant writers of this period. Although these fictions arise within different cultural and linguistic contexts, they share many concerns on subjects such as the self, relations between self and other, gender and sexuality, the liberating and/or coercive power of modern spaces and institutions on individuals, and the possibility of personal reinvention and change. The various literary forms through which these concerns are expressed will also be discussed.

ENGL360 Introduction to Linguistics (3 credits)

This course is a general introduction to the scientific study of language, particularly its theoretical debates, methodology, and relationship to other disciplines. With this aim in mind, we will examine the analytic methods and major findings of various subfields of linguistics, including phonetics, phonology, morphology, syntax, semantics, and language change. Additional topics may include pragmatics, the acquisition of language, language varieties, and sign language. By the end of the course, you should be acquainted with systematic methods of studying language, be aware of the fundamental similarities and diversity of human languages, and have an informed perspective on how issues of language have an impact on our society

ENGL381 English Syntax for TESL Teachers (3 credits)

This course investigates the syntax (Sentence structure properties) of human language. It addresses the need for a scientific model to explain human knowledge of language that also makes prediction about its representation in the mind .The focus here is on human language as a specific cognitive capacity restricted to humans, rather than on the individual languages that are made possible by the existence of this capacity. For this reason, the course explores in detail many structural properties that are common across different languages including constituents of sentence structure , the verb phrase , adverbials ,the verb group , noun phrases , sentences within sentences and non-finite clause.

ENGL400 Phonology (3 credits)

The purpose of this course is to introduce students to the conceptual framework of phonetics and phonology. The course will explore the physical nature of speech sounds through focusing on articulatory phonetics and then focus on examining how sound systems are members of a particular linguistic system. The course will provide students with an overview of phonetic representations and transcriptions of the English sound system followed by the International Phonetic Alphabet. Students will be able to apply the theoretical background gained in the course to contrast distinctive feature representations across languages.

ENGL410 Readings in World Literature (3 credits)

The course examines representative masterpieces of World Literature in original and in translation, with selections from modern writers of Brazilian, American, English, African, and Eastern European backgrounds. Students will be required to write analytical writing. Essay grades will constitute 50 % of the course grade.

ENGL470 Advanced English as a FL Conversation (3 credits)

This course is intended as an induction into meaning in interaction leading into proficient understanding of the field of semantics and pragmatics and their inter-phase as fundamental components of enhancing students' speaking, writing, reading and comprehension practical and teaching skills. The focus of the course is on expanding students' knowledge of conveying intended meaning properly, using idiomatic expressions, practicing increased correct conversational fluency, avoiding cross-linguistic errors, and implementing nonverbal and intercultural skills through understanding cross-cultural pragmatics. An integration of conversation theory and its applications in the learning context is aimed to enrich a student's theoretical and practical knowledge base for advanced EFL conversation.

ENVR200L Environmental Science Lab (1 credit)

This course is a co-requisite for Environmental Science (ENVR200). The students apply in the lab the fundamentals of environmental issues explained in ENVR200.

FREN301 Intermediate French: A2-2 (3 credits)

45 hours of French DELF A2. Les étudiants apprennent à mieux développer les compétences acquises en FREN151 pour devenir des locuteurs indépendants, autonomes, capables à interagir dans un milieu francophone.

FREN315 Intermediate French: A2-3 (3 credits)

45 hours of French introduction to DELF B1. Les apprenants clôturent le dernier niveau du A2 et s'approprient à passer au B1. Les activités proposées offrent aux étudiants de nombreuses opportunités d'interagir d'une manière authentique avec leur milieu et de devenir des locuteurs autonomes.

FREN365 Upper French: B1-1 (3 credits)

45 hours of French DELF B1. L'apprentissage du B1.1 s'approfondit, que ce soit au niveau de la syntaxe, grammaire ou vocabulaire.

FREN375 Upper French: B1-2 (3 credits)

45 hours of French DELF B1. A ce niveau, l'apprenant devient indépendant. Il est maintenant capable de poursuivre une interaction: il peut comprendre et poursuivre une discussion, donner son avis et son opinion. Il est capable de se débrouiller dans des situations imprévues de la vie quotidienne.

FREN415 Upper French: B1-3 __ DELF B1 (3 credits)

45 hours of revision for DELF B1: Les apprenants devenus prêts pour passer les épreuves du DELF B1, ils seront sujets à l'examen DELF B1, dont la note sera retenue pour le prochain cours du FREN485.

FREN485 Upper French: B2- FLE (3 credits)

45 hours of DELFB2: Les apprenants ayant acquis un niveau B1, ce cours vise l'acquisition des compétences orales et écrites afin de se préparer ultérieurement aux épreuves de D.E.LF.B2.

LANG230 Sign Language (3 credits)

This course is designed to introduce the fundamentals of Sign Language to non-signers who want to achieve a basic communication skill in the Sign Language commonly used by deaf people in Lebanon. Both expression and comprehension skills will be emphasized throughout the course.

PHIL200 Introduction to Philosophy (3 credits)

This course is designed to give students knowledge and comprehension to philosophy. It preserves the goal of introducing students to philosophy by presenting in an accessible way, classical and contemporary readings on issues that are important to their lives.

SPAN250 Spanish level 2 (3 credits)

This course helps students to access the Spanish-speaking world, improves their academic training, and gives confidence to move forward to other levels.

SPAN300 Spanish level 3 (3 credits)

This course consists of different acquisitions, organized as per the following: reading comprehension, written expression and interaction.

SSCI200 Introduction to Sociology (3 credits)

The aim of this course is to drive the student to grasp the overflows of sociology. In other words, to grasp the meanings of capacitating incapacitations of individuals, groups, institutions, politics, economics, religion and etc. on the basis of their societal functioning.

SSCI205 Introduction to Psychology (3 credits)

This course introduces the basics of psychology, the science of behavior and mental processes. It aims to discuss the developmental, social and biological factors that shape our behavior. Class discussions are pivotal, where innovative ideas and personal opinions are welcomed and encouraged.

TRNS355 Scientific and Technical Translation (3 credits)

This course trains students in translating scientific & technical texts from various fields from English & French into Arabic (legal, economic, medical, etc) and enriches the students knowledge of scientific terminologies and concepts. Prerequisite: (TRNS 305).

TRNS375 General Translation III: Introduction to Translation FR-AR (3 credits)

Basic techniques for translating non-specialized texts from French into Arabic: This course focuses on the different approaches used for understanding the source text and formulating the target text while paying special attention to mistakes commonly made by translators.

TRNS400 Economic Translation (3 credits)

Techniques for translating economic texts in three linguistic combinations: B-A/A-B/C-A: This course acquaints students with basic economic principles and terminology. It covers a variety of topics including: stock markets, Islamic finance, financial instruments, GDP and GNP, financial crises, VAT, corporate governance, loans, SMEs, bank reports, etc.

TRNS410 Medical Translation (3 credits)

Techniques for translating medical texts in three linguistic combinations: B-A/A-B/C-A: Students are trained in the protocols of translating medical texts of the type that is usually communicated to the general reader through mass media (new inventions, modern research, diseases, etc). This course acquaints students with basic medical terminology and various kinds of texts that they might deal with on the translation market (prescriptions, pharmaceutical reports, awareness-raising brochures, hospitalization reports, etc).

TRNS415 Translation of Legal & Official Documents (3 credits)

Develops higher level of understanding and translating legal texts from Arabic and French into English. Prerequisite: (TRNS 355).

TRNS420 Consecutive Interpretation (3 credits)

Consecutive Interpretation

TRNS445 Literary Translation (3 credits)

This course trains students in translating literary texts from English into Arabic and vice versa. Prerequisite: (TRNS 355).

TRNS470 Translation Senior Project (3 credits)

A series of translation tests in three linguistic combinations (B-A/A-B/C-A) to determine whether a senior student is eligible to graduate_: In this course students are tested in all technical domains and in all combinations to assess their readiness for the job market.

TRNS480 Introduction to Translation Studies (3 credits)

Major theories and approaches in translation: this course introduces students to the theoretical aspect of their major, giving them a taste of some groundbreaking theoretical research in the domains of applied Linguistics and Translation Studies, Translatology.

TRNS485 Translation of Various Domains FR-AR/ AR-FR (3 credits)

Now that students are well acquainted with the French languages, they will get exposed to more specific texts (targeting most domains of translation) and will work on the translation from and into French.

7 School of Pharmacy

7.1 Vision

The vision of the school of pharmacy is to be a socially accountable institution committed to advance the pharmacy profession through education, practice, research, and community outreach.

7.2 Mission

The mission of the school of pharmacy is to develop distinguished professionals in pharmacy practice, research and community services through a dynamic educational program aligned with national and international standards.

7.3 Core Values

- **Distinction:** we aim for distinction and motivation in teaching and practice.
- **Diversity:** we embrace a strong view that values diversity and cultural differences and recognizes the importance of global interdependence and sustainability.
- **Collaboration:** we collaborate with national and international associations and construct partnership with national and international practice sites.
- **Integrity, trust, and respect:** we are committed to being a school that demonstrates high level of trust and respect for all persons and cultivates individuals and institutional integrities in all aspects.
- **Leadership:** we promote leadership and professional development and endorse innovation and entrepreneurship.
- **Dedication:** we empower our students to attain the maximum intellectual potential, develop a culture of community services and commitment.

7.4 Academic Programs

The school of pharmacy consists of the following Programs:

1. Bachelor of Pharmacy (BPharm)
2. Doctor of Pharmacy (PharmD)

7.5 Admission Requirements

7.5.1 Admission Requirements - Undergraduate Program (BPharm)

Application for admission should be submitted before the mid of August of each year. Students are accepted to the school of pharmacy in the fall semester of each academic year only, based upon their Bacculaureate II Lebanese System, examination results and University Placement Tests (UPTs). Furthermore, applicants to the undergraduate programs in the school of pharmacy are first accepted into the Pre-Pharmacy Years. They are also subjected to the following general conditions:

1. Have earned a recognized high school diploma, Bacculaureate II Lebanese System, or its equivalency that is a freshman in sciences or foreign secondary school equivalent.
2. A candidate should have earned the Lebanese Bacculaureate with an overall average of at least 50%; the categories of the Lebanese Bacculaureate are listed below:
 - a. General Science
 - b. Life Science

Table 24: School of Pharmacy Placement Criteria

Subject	Score	Placement
English	0 - 30	ENGL051 Basic English Skills
	31-40	ENGL101 Introduction to Oral and Written Skills
	41-49	ENGL151 Advanced Writing Skills
	50 and above	Exempted from ENGL051, ENGL101, and ENGL151
Chemistry	0-29	Rejected
	30 - 49	CHEM160 (Freshman Chemistry II, 3 Credits)
	60 - above	Exempted
Biology	0-29	Rejected
	30 - 59	BIOL160 (Freshman Biology II, 3 Credits)
	60 - above	Exempted

The passing grade of the aforementioned remedial courses is either Pass (*P*) or Non-Pass (*NP*) in which the passing grade cannot be less than 60%.

Selection to Professional Years

All accepted students are enrolled in pre-professional years (Pre-Pharmacy) of the Bachelor of Pharmacy program. Selection from pre-pharmacy to the first professional year (3rd year) occurs if the students meet one of the following criteria:

1. A minimum of Major Cumulative Grade of 75 % (mGPA \geq 2.5) and a maximum of two GEE/GER courses remaining from Pre-Professional Years.
2. If only one major and one GEE/GER courses remaining from Pre-Professional Years with Major Cumulative Grade \geq 78 % (mGPA \geq 2.75).
3. If two major courses and no GEE/GER courses remaining from Pre-Professional Years with Major Cumulative Grade \geq 80 % (mGPA \geq 3).

7.5.2 Admission Requirements - Graduate Program (PharmD)

Admission into the PharmD program takes place only in the fall semester of each academic year; therefore, applicants must submit a complete application form no later than July 20th of the expected year of admission. Applicants who have earned their Bachelor degree of Pharmacy from Universities outside LIU and is accredited by the Lebanese Ministry of Education and Higher Education can apply to the PharmD program if and only if their Cumulative Grade is at least 80 % (mGPA \geq 3) and have strong academic and nonacademic recommendations. As may be found necessary, applicants are also required to sit for the English Placement Test (EPT) and take specific remedial courses. Furthermore, candidates will be interviewed by the Admission Committee as part of the admission procedure.

7.5.3 Transfer Students - Course Transfer Criteria

Courses taken at universities, accredited by the Lebanese Ministry of Education and Higher Education, are transferable by the Lebanese International University. Course transfer criteria adopted by the school of pharmacy is only applicable as follows:

Applicants who hold a Bachelor degree in Biomedical Sciences from an accredited university can apply as a transfer student to the Pre-Pharmacy Program in the school of pharmacy. Those candidates are not required to sit for UPT except for the EPT if they earned their Bachelor degree from French institutions. The total number of transferred credits cannot exceed 50% of the total required credits of the Pre-Pharmacy Program. Furthermore, the required total average to be accepted as a transfer student holding a degree from a Lebanese University should be at least 70%. The same applies to Non-Degree holders; however, those with a Bachelor degree are given priority for admission to the Pre-Pharmacy Program.

- a. The required total average to be accepted as transfer students holding a degree from other non-Lebanese Universities should be at least 80%.
- b. Transferable courses are subject to passing grades shown in
- c. Table 25 below:

Table 25: Courses Transfer Requirements – School of Pharmacy

System	Transferrable Grade Undergraduate	Transferrable Grade Graduate (PharmD)
Lebanese University	60% and above	NA
Other Universities	70% and above	NA

7.6 Graduation Requirements

7.6.1 Undergraduate Program - Bachelor of Pharmacy (BPharm)

An undergraduate student can only graduate upon the fulfillment of the program credits requirements with both Major and Cumulative Grades of 70% or higher. Also, major and core courses should have a minimum grade of 70%. Students should also spend at least 12 months of practice in community and hospital pharmacies during their study, 9 months of which are accomplished through the university curriculum.

1. A minimum of 24 credit hours of General Education (Minimum 13% of total credit hours requirements).
2. A minimum of 32 credit hours in Core Requirements (Minimum 18% of total credit hours requirements).
3. A minimum of 123 credit hours in Major Area Requirements (minimum 69% of total credit hours requirements).
4. A minimum of 179 credit hours in total.

7.6.2 Graduate Program - Doctor of Pharmacy (PharmD)

A graduate student can only graduate upon the fulfillment of the program credits requirements, including the Project, with a minimum Cumulative Grade of 80% (mGPA \geq 3).

7.7 Program of Study - Undergraduate program

7.7.1 PHAR - Bachelor of Pharmacy (179 Credits)

About the program

The Bachelor of Pharmacy program is a five-year undergraduate program that prepares graduates to practice pharmacy as a profession and to register in the Lebanese Order of Pharmacists (OPL). The BPharm program is a total of 179 credits further divided into Pre-Professional (two years; 65 credits) and Professional pharmacy (three years; 114 credits).

The school of pharmacy at LIU is a national leader in pharmacy education and aims at delivering high quality education through an innovative and dynamic curriculum that incorporates depth and diversity of knowledge to reach the expected competencies that the graduates will obtain.

The BPharm curriculum is designed to prepare pharmacy graduates for lifelong learning and leadership capabilities as drug therapy experts and managers in the country's healthcare system. The school is among the few schools of pharmacy in Lebanon to establish a clinical curriculum from the beginning. The curricular philosophy is consistent with the goals, vision, mission and values of the school and the university. It implies preparing pharmacists to have the knowledge and skills to optimize patient care and treatment outcomes as an effective member of the health care team. This philosophy provides a strong educational basis in the biomedical, pharmaceutical, social, administrative and clinical sciences that will equip graduates with the appropriate competencies to excel in various fields of pharmacy and be dedicated to lifelong professional development.

The courses are arranged through the study plan in a way that ensures the progressive development of professional competencies. The first and second years (pre-pharmacy years) broaden the students' foundational knowledge in basic biological, physical and chemical sciences and general education. The curriculum of the professional program progresses through the third and fourth year with core competencies that are designed to guarantee the sequential progress through the main pharmaceutical sciences (origin of drugs, physicochemical systems, dosage forms, pharmacokinetics), biomedical and clinical sciences (pharmacology, pharmacotherapeutics, pharmacogenomics, lab data, physical assessment), and experiential education (pharmacy practice experience, PPE), precisely in community settings. In the fifth year, more advanced pharmacy courses are integrated, where students become competent in clinical pharmacy and therapeutics, over the counter drugs, pharmacoconomics, toxicology, pharmacy dispensing practice, and pharmacy law. Moreover, the pharmacy students implement and further develop skills through inter-professional education during pharmacy practice experiences at different hospital settings, which enable them to communicate and discuss with diverse healthcare teams the selection of the most appropriate medicine for every patient at different divisions of healthcare units, at well-established high standard hospitals' wards. As such, their knowledge becomes oriented for application through a structured program that is designed to cover various aspects of clinical practice. As a result, this sharpens their skills and competencies before earning their degree.

Domain of Work

1. Community Pharmacy:
 - a. Also known as a retail pharmacy, the community pharmacy is the most well-known type of pharmacy. A community pharmacist usually provides the community with access to the medications they need, as well as advice to promote the safe and effective use of the medicines they provide. They counsel patients on proper medication use and help prevent dangerous or troublesome combinations or side-effects of medication. Duties of a community pharmacist may also include: helping patients with the reimbursement of drug expenses, supervising pharmacy technicians and keeping inventory of the drugs stocked.
2. Governmental and Non-Governmental Institutions:

- a. Pharmacists in governmental institutions such as at the Ministry of Public Health, army, and Lebanese Order of Pharmacists. Within these settings, pharmacists can engage in a wide array of tasks, including direct patient care services, biomedical and epidemiological research, reviewing new drug applications, and developing and administering health care policy.
 - b. Pharmacists in non-governmental organizations responsibilities include: management of the drug supply cycle, ensuring the distribution of the right drugs, and promoting public health awareness.
3. Hospital Pharmacy:
 - a. A hospital pharmacy is the place where the management of medications occurs in a hospital, medical clinic or nursing home. A hospital pharmacist often works in close collaboration with other health professionals to ensure that the medication regimen for each patient is optimized to achieve the best outcomes. They may also be involved with clinical trials, as well as compounding medications for individualized dosing or sterile medications. Teaching, administrative functions in the selection, proper storage, distribution and prescription protocols of drugs, education of medical staff in the aspects of selection, administration and monitoring of drug safety, as well as assessing drug levels and drug safety may all be part of their work. Hospital pharmacists may also specialize in one or other area of pharmacotherapy.
 4. Clinical Pharmacy:
 - a. Clinical pharmacists work in hospitals, clinics, and other healthcare settings. They spend little time dispensing prescriptions. Instead, they are involved in direct patient care. Clinical pharmacists may go on rounds in a hospital with a physician or healthcare team. Their aim is to ensure the optimal use of medications for the best outcomes through the provision of drug information and monitoring for drug safety and efficacy. They can predict drug interactions and so prevent many adverse reactions to medication. They also may conduct some medical tests and offer advice to.
 5. Pharmaceutical Company:
 - a. Pharmacists in pharmaceutical companies may work in the following areas: sales and marketing, regulatory affairs, scientific/ professional affairs (e.g., professional relations, professional education, and medical science liaison), and medical information.
 6. Pharmaceutical Industry:
 - a. Pharmacists in pharmaceutical industry work in the following areas: research and development, all phases of drug product development, manufacturing, sales and marketing, corporate administration, and quality control.
 7. Academia and Research:
 - a. A pharmacist can teach clinical pharmacy, community pharmacy sessions, pharmacology courses for nursing students, and public health topics. Additionally, pharmacists are able to conduct research and represent them at conferences and other events.

Program Educational Objectives (PEOs)

1. Develop, integrate and apply biomedical and therapeutic knowledge to provide patient-centered care and advance population health.
2. Assess medication use based on evidence-based medicine and patient profile to prepare, compound and dispense proper medications while counseling patients.
3. Utilize all available resources to provide and optimize patient-centered care.
4. Demonstrate a comprehensive approach to practice and care.
5. Exhibit commitment to the highest standards of professional attitude and behavior.
6. Engage in personal and professional development.

Program Learning Outcomes (PLOs)

The school's program learning outcomes are:

1. Foundational Knowledge: The program equips the graduates to achieve understanding of established and evolving biomedical, pharmaceutical, clinical, social, behavioral sciences and demonstrate the ability to identify and assess new information relevant to a question and to apply this to clinical problem

knowledge solving.

- a. Learner: Develop, integrate, and apply knowledge from the foundational sciences (i.e., biomedical, pharmaceutical, social/ behavioral/administrative, and clinical sciences) to evaluate the scientific literature, explain drug action, and solve therapeutic problems, and advance population health and patient-centered care.
2. Pharmaceutical care: The program equips the graduates with the knowledge to assess medication use based on evidence-based medicine and rely on patient profile; compound and choose the correct dosage form and dispense medications while counseling patients.
 - a. Assessment of Medicines: Identify drug information and manage patient-centered care problems by applying clinical skills.
 - b. Compounding Medicines: Choose the appropriate dosage form based on patient's disease, preference and drug selection, in addition to pharmaceutical products preparation.
 - c. Dispensing: Dispense medications for patients in safe and effective ways by assuring accurate medication prescription, counseling patients and avoiding drug related problems and errors.
3. Essentials for Practice & Care: The program equips graduates to utilize all available resources in order to provide and optimize patient-centered care. In addition, the program helps the students know how to promote patient and population health.
 - a. Patient-centered Care: Provide individualized, evidence-based, and patient-centered care as the medication expert of the healthcare team or when communicating with patients.
 - b. Medication Use Systems Management: Manage patient healthcare needs using human, financial, technological, and physical resources to optimize the safety and efficacy of medication use systems.
 - c. Promoter & Care Provider: Promote health and wellness at both individual and community level and describe how population-based care influences patient-centered care, the development of practice guidelines and evidence-based best practices.
4. Approach to Practice & Care: The program equips the graduates with the knowledge, skills, abilities, behaviors, and attitudes necessary to solve problems, educate, advocate, collaborate, and conduct research, while working with people from diverse backgrounds, and effectively communicate verbally and nonverbally.
 - a. Problem Solver: Detect problems, develop potential strategies, and execute possible solutions.
 - b. Collaborator: Collaborate with other healthcare professionals to manage the care of a patient through advising on therapeutic decision-making in a multi-professional team.
 - c. Scholar: Applying medication therapy expertise, learning continuously, updating their knowledge and engaging in research.
 - d. Cultural Sensitivity: Practice their duties as pharmacists to allow access to quality care for all patients without any discrimination.
 - e. Communicator: Use appropriate communication skills (verbal and non-verbal) to build rapport and engage with patients and their caregivers, with other healthcare professionals, other support staff, and other relevant third parties.
5. Professionalism: Demonstrate a commitment to the highest standards of professional responsibility, honesty and liability; adhere to ethical principles and moral reasoning in relation to patients, other healthcare professionals and society.
 - a. Practices Professionally: Exhibit behaviors and values that are consistent with the trust given to the profession by patients, other healthcare providers and society.
 - b. Practices Legally: Know, comprehend and comply with major policies and legislative procedures related to pharmaceutical products.
 - c. Practices Ethically: Demonstrate and embody ethical standards, principles and moral reasoning in all professional interactions with patients, families, other healthcare professional and society.
6. Personal & Professional Development: The program equips the graduates to demonstrate a commitment to the personal development through continuous self-awareness; and to identify characteristics that reflect skills pertaining to leadership, management and innovation.
 - a. Self-Awareness: Examine and reflect personal knowledge, skills, abilities, beliefs, biases, motivations and emotions that could enhance or limit personal and professional growth.

- b. Leadership and Management: Demonstrate responsibility for creating and achieving shared goals regardless of the positions.
- c. Innovation: Demonstrate ability to introduce new ideas and methods.

Curriculum

Course Title	Cr
General Education Requirements	18
ARAB200 - Arabic Language and Literature	3
CSCI200 - Introduction to Computers	3
CULT200 - Introduction to Arab - Islamic Civilization	3
ENGL201 - Composition and Research Skills	3
ENGL251 - Communication Skills	3
MATH245 - Statistics for Health Sciences	3
Core Requirements	32
BIOC310 - Medical Biochemistry	4
BIOL200 - General Biology I	3
BIOL200L - General Biology I Lab	1
BIOL360 - Human Physiology & Anatomy	4
BIOL360L - Human Physiology & Anatomy Lab	1
BIOL385 - Microbiology	3
BIOL385L - Microbiology Lab	1
BMED445 - Pathophysiology	3
CHEM200 - General Chemistry	3
CHEM200L - General Chemistry Lab	1
CHEM250 - Organic Chemistry I	3
CHEM300 - Organic Chemistry II	3
CHEM300L - Organic Chemistry Lab	2
Major Requirements	117
PHAR200 - Introduction to Drug Information	2
PHAR205 - Quantitative Analysis	2
PHAR250 – Pharmacy Practice, History & Ethics	3
PHAR300 - Pharmaceutical Calculations	2
PHAR400 - Medicinal Chemistry I	3
PHAR407 - Pharmaceutical Analysis & Biotechnology	2
PHAR407L - Pharmaceutical/Biotechnology Lab	1
PHAR410 - Drug Dosage Forms I	3
PHAR415 - Professional Communications	1
PHAR420 - Physical Pharmacy	3
PHAR425 - Pharmacognosy & Herbal Medicine	3
PHAR435 - Dermatology and Cosmetology	3

PHAR450 - Medicinal Chemistry II	3
PHAR456 - Introduction to Pharmacy Practice & Simulation	3
PHAR460 - Pharmacy Management & Drug Marketing	3
PHAR465 - Interpretations of Lab Data	3
PHAR472 - Drug Dosage Form II	3
PHAR472L - Compounding Lab	1
PHAR480 - Pharmacy Practice Experience I (PPEI)	6
PHAR505 - Pharmacology I	4
PHAR510 - Biopharmaceutics & Pharmacokinetics	4
PHAR515 - Pharmacotherapeutics I (Neurology/Psychiatry)	3
PHAR520 - Pharmacotherapeutics II (Pulmonary/Rheumatology)	3
PHAR555 - Pharmacology II	4
PHAR560 - Pharmacogenomics	3
PHAR565 - Pharmacotherapeutics III (Cardiology/Nephrology)	3
PHAR570 - Pharmacotherapeutics IV (Endocrinology/Dermatology)	3
PHAR580 - Pharmacy Practice Experience II (PPE II)	6
PHAR585 - Pharmacy Seminar	2
PHAR606 - Non-Prescription Drugs	3
PHAR610 - Toxicology	3
PHAR615 - Pharmacotherapeutics V (Infectious Diseases)	3
PHAR620 - Pharmacotherapeutics VI (Hematology/Oncology)	3
PHAR625 - Pharmacoeconomics	3
PHAR635 - Parenteral Dosage Forms	2
PHAR650 - Pharmacy Dispensing Practice	2
PHAR656 - Pharmacy Law	1
PHAR660 - Pharmacy Practice Experience III (PPE III)	6
PHAR665 - Pharmacy Practice Experience IV(PPE IV)	6
General Education Electives	6
GE***** General Education Electives	6
Major Elective	6
ME***** Major Elective	6

List of Major Electives - PHAR

Course Title	Cr
PHAR530 - Clinical Nutrition	3
PHAR531 - Introduction to Epidemiology and Biostatistics	3
PHAR532 - Special Topics: Geriatrics and Palliative Care	3
PHAR533 - Special Topics: Ambulatory Care & First Aid	3
PHAR534 - Special Topics: Immunization & Vaccination	3

PHAR540 - Pharmacy Careers	3
PHAR541 - Hospital Pharmacy	3
PHAR590 - Industrial Pharmacy	3
PHAR591 - Instrumental Analysis	3
PHAR592 - Special Techniques in Antimicrobial Resistance	3

7.8 Program of Study - Graduate Program

7.8.1 PharmD - Doctor of Pharmacy (30 Credits)

About the program

The doctor of pharmacy (PharmD) program is an advanced clinical-based experiential education that prepares the students to become proficient in direct patient care. The program, which is delivered over one year, is rigorous, yet flexible, innovative, and intellectually exciting. It consists of Advanced Pharmacy Practice Experiences (APPEs) designed to provide pharmacy students with the opportunity to become a member of the pharmacy healthcare team. Depending on the rotation, APPEs take place in a variety of settings in order to expose students to both traditional and nontraditional career opportunities within the profession.

The APPE of the program consists of six clinical and one community rotations. The advanced practice clinical rotations are further divided into major and elective rotations. These APPE rotations should reinforce and continue the development of skills and knowledge students received during their Bachelor of Pharmacy curriculum. The APPEs should also provide students the opportunity to serve various patient populations in a variety of settings and to collaborate with other healthcare professionals. These experiences should offer exposure to patients and disease states that clinical pharmacists are likely to encounter in practice. The students will work under the supervision of a licensed doctor of pharmacy, the preceptor, at all times during the APPEs.

Domain of Work

1. Clinical Pharmacy:
 - a. Clinical pharmacists work in hospitals, clinics, and other healthcare settings. They spend little time dispensing prescriptions. Instead, they are involved in direct patient care. Clinical pharmacists may go on rounds in a hospital with a physician or healthcare team. Their aim is to ensure the optimal use of medications for the best outcomes through the provision of drug information and monitoring for drug safety and efficacy. They can predict drug interactions and so prevent many adverse reactions to medication. They also may conduct some medical tests and offer advice to.
2. Community Pharmacy:
 - a. Also known as a retail pharmacy, the community pharmacy is the most well-known type of pharmacy. A community pharmacist usually provides the community with access to the medications they need, as well as advice to promote the safe and effective use of the medicines they provide. They counsel patients on proper medication use and help prevent dangerous or troublesome combinations or side-effects of medication. Duties of a community pharmacist may also include: helping patients with the reimbursement of drug expenses, supervising pharmacy technicians and keeping inventory of the drugs stocked.
3. Governmental and Non-Governmental Institutions:
 - a. Pharmacists in governmental institutions such as at the Ministry of Public Health, army, and Lebanese Order of Pharmacists. Within these settings, pharmacists can engage in a wide array of tasks, including direct patient care services, biomedical and epidemiological research, reviewing new drug applications, and developing and administering health care policy.
 - b. Pharmacists in non-governmental organizations responsibilities include: management of the drug supply cycle, ensuring the distribution of the right drugs, and promoting public health awareness.
4. Hospital Pharmacy:
 - a. A hospital pharmacy is the place where the management of medications occurs in a hospital, medical clinic or nursing home. A hospital pharmacist often works in close collaboration with other health professionals to ensure that the medication regimen for each patient is optimized to achieve the best outcomes. They may also be involved with clinical trials, as well as compounding medications for individualized dosing or sterile medications. Teaching,

administrative functions in the selection, proper storage, distribution and prescription protocols of drugs, education of medical staff in the aspects of selection, administration and monitoring of drug safety, as well as assessing drug levels and drug safety may all be part of their work. Hospital pharmacists may also specialize in one or other area of pharmacotherapy.

5. Pharmaceutical Company:
 - a. Pharmacists in pharmaceutical companies may work in the following areas: sales and marketing, regulatory affairs, scientific/ professional affairs (e.g., professional relations, professional education, and medical science liaison), and medical information.
6. Pharmaceutical Industry:
 - a. Pharmacists in Pharmaceutical industry work in the following areas: research and development, all phases of drug product development, manufacturing, sales and marketing, corporate administration, and quality control.
7. Academia and Research:
 - a. The “Academia” category may be loosely defined as belonging to a university faculty, usually that of a college of pharmacy. Duties of an academic pharmacist may include administrative activities, scientific research, teaching professional student pharmacists, supervising research and teaching graduate students, speaking and/or publishing in scientific venues/journals, student advising, and mentoring student pharmacists through experiential practice sites. Working in academia can allow pharmacists to educate and inspire the next generation of healthcare professionals. Positions may range from clinical instructor in a classroom or off-campus site to the dean of a college of pharmacy.

Program Educational Objectives (PEOs)

1. Demonstrate a commitment to improve the care of patients in all aspects of clinical and community pharmacy practice.
2. Apply the pharmaceutical care model of practice in all aspects of drug therapy to individualize patient therapy.
3. Perform routine professional functions in all areas of pharmacy practice.
4. Demonstrate an expanded knowledge in the areas of institutional pharmacy practice, rational and economic use of drug therapy, and the different roles of drug therapies in the management of patients’ medical problems.
5. Critically evaluate the medical and pharmaceutical literature when responding to drug information requests, and when applying new advances in therapy to the management of individual patient medical problems.
6. Advance their communications skills to communicate effectively with patients, pharmacists, and other health care providers.
7. Provide effective education on drug therapy to patients, other health care providers, pharmacy staff and students.
8. Demonstrate a commitment to continued self-directed learning.

Program Learning Outcomes (PLOs)

The program learning outcomes are:

1. Approach to Practice & Care: The program equips the graduates with the knowledge, skills, abilities, behaviors, and attitudes necessary to solve problems, educate, advocate, collaborate, and conduct research, while working with people from diverse backgrounds, and effectively communicate verbally and nonverbally.
 - a. Problem Solver: Detect problems, develop potential strategies, and execute possible solutions.
 - b. Collaborator: Collaborate with other healthcare professionals to manage the care of a patient through advising on therapeutic decision-making in a multi-professional team.
 - c. Scholar: Applying medication therapy expertise, learning continuously, updating their knowledge and engaging in research.

- d. Cultural Sensitivity: Practice their duties as pharmacists to allow access to quality care for all patients without any discrimination.
 - e. Communicator: Use appropriate communication skills (verbal and non-verbal) to build rapport and engage with patients and their caregivers, with other healthcare professionals, other support staff, and other relevant third parties.
2. Professionalism: Demonstrate a commitment to the highest standards of professional responsibility, honesty and liability; adhere to ethical principles and moral reasoning in relation to patients, other healthcare professionals and society.
 - a. Practices Professionally: Exhibit behaviors and values that are consistent with the trust given to the profession by patients, other healthcare providers and society.
 - b. Practices Legally: Know, comprehend and comply with major policies and legislative procedures related to pharmaceutical products.
 - c. Practices Ethically: Demonstrate and embody ethical standards, principles and moral reasoning in all professional interactions with patients, families, other healthcare professional and society.
 3. Personal & Professional Development: The program equips the graduates to demonstrate a commitment to the personal development through continuous self-awareness; and to identify characteristics that reflect skills pertaining to leadership, management and innovation.
 - a. Self-Awareness: Examine and reflect personal knowledge, skills, abilities, beliefs, biases, motivations and emotions that could enhance or limit personal and professional growth.
 - b. Leadership and Management: Demonstrate responsibility for creating and achieving shared goals regardless of the positions.
 - c. Innovation: Demonstrate ability to introduce new ideas and methods.

Curriculum

Course Title	Cr
Major Requirements	30
PHAR710 - Advanced Pharmacy Practice Experience (Community)	2
PHAR711 - Advanced Pharmacy Practice Experience (IM)	4
PHAR712 - Advanced Pharmacy Practice Experience (CCU)	4
PHAR713 - Advanced Clinical Pharmacokinetics	2
PHAR715 - PharmD Project Part I	3
PHAR760 - Advanced Pharmacy Practice Experience (ICU)	4
PHAR761 - Advanced Pharmacy Practice Experience (Elective I)	2
PHAR762 - Advanced Pharmacy Practice Experience (Pediatrics)	4
PHAR763 - Advanced Pharmacy Practice Experience (Elective II)	2
PHAR765 - PharmD Project Part II	3

7.9 General Education Electives - School of Pharmacy

Code	Course Title	Cr
AGRS235	Landscape Horticulture	3
AGRS235	Landscape Horticulture	3
ARTS204	Introduction to Theater	3
ARTS390	Mosaic I	3
BMED210	Introduction to Community Health	3
EDUC201	Foundation of Education	3
ENVR200	Environmental Science	3
ENVR205	Environment & Health	3
ENVR320-	Global Health Challenges	3
FREN200	Elementary French	3
HIST200	Modern Japan	3
HIST205	Modern China	3
HIST245	Modern Africa	3
HIST250	Europe in the Twentieth Century	3
HIST255	International Relations in East Asia Since 1945	3
HIST260	Modern Spain	3
HIST270	Modern Latin America	3
HIST350	Contemporary World History	3
HUMN200	Community Service	3
HUMN210	Human Rights - Global Perspective	3
HUMN215	Introduction to Civic Society	3
INET01	Innovative and Entrepreneurship Startup Essentials	3
LANG201	Beginners Hebrew	3
LANG212	Conversational Hebrew	3
LANG221	Introduction To Italian	3
LANG222	Introduction To French	3
LANG223	Introduction To Spanish	3
LANG224	Introduction To Deutsch	3
LANG225	Introduction To German	3
LANG227	Introduction To Chinese	3
LANG228	Introduction To Persian	3
LANG300	Intermediate Russian	3
NSCI200	The Universe and the Earth	3
NSCI210	Biodiversity and the Evolution of Life	3
NSCI270	Environmental Ethics	3
NUTR200	Nutrition and Health	3
PHED200	Sports and Health	3
PHIL200	Introduction to Philosophy	3
PHIL205	Introduction to Ethics	3
PHIL210	World Religions	3
POLS205	World Current Affairs	3
POLS215	Modern Arab Political Thought	3
POLS230	Lebanese Labor Law	3
POLS300	Lebanese Politics	3
POLS316	Politics of Modern Syria	3
POLS440	The Arab Israeli Conflict	3
RATV200	Short Film Making	3
SSCI200	Introduction to Sociology	3
SSCI205	Introduction to Psychology	3
SSCI210	International Politics	3
SSCI215	Introduction to Music	3
SSCI220	Introduction to Anthropology	3
SSCI225	Introduction to Cultural Anthropology	3
SSCI235	The Individual and Modernity	3
SSCI250	The Cultural Landscape	3
SSCI255	Intellectual History of the Twentieth Century	3
SSCI265	Geography of the Islamic World	3
SSCI285	Gender and Global Issues	3
SSCI310	Foundations of the Social Sciences	3

7.10 Course Description - School of Pharmacy

PHAR200 Introduction to Drug Information (2 credits)

This course introduces students to basic principles of drug information including, medical terminologies, and drug monograph. In addition, students will learn how to identify the different parts for the (SOAP note). The course also provides students with the knowledge to write drug consults and drug utilization review. The course will help students to recognize the different literature resources available, different types of a study design and apply basic biostatistics calculations.

PHAR205 Quantitative Analysis (2 credits)

This course introduces the fundamental principles of quantitative chemical analysis, including basic statistics, chemical equilibria (solubility, acid-base, complexation, precipitation, and redox titrations), electroanalytical techniques and introductory spectroscopy. It provides the students with experimental insights and skills in quantitative analysis through conduction of experiments with direct relevance for work in professional and academic laboratories (e.g., statistical evaluation of data, buffer and pH calculations, EDTA titrations and analysis of real samples when possible). The course also familiarizes the students to independently plan and conduct chemical analysis following proper analytical procedures and relevant safety regulations, analyze data, draw conclusions and solve problems with scientific rationale.

PHAR250 Pharmacy Practice, History & Ethics (3 credits)

This course emphasizes upon the historical background and major milestones in the evolution of pharmacy from apothecaries to clinical pharmacy. The first part for this course deals with pharmacy history present and future. The second part deals with pharmacy practice including major medical terms and abbreviations function for international pharmaceutical organizations and overview about drug classes and dosage forms. The last part deals with ethical principles governing patient-pharmacist relationship and research.

PHAR300 Pharmaceutical Calculations (2 credits)

This course provides students with the knowledge and skills needed to mix medications to obtain concentration/dose, to convert measurements from the metric system to the apothecary system and vice versa, to calculate doses needed for pediatrics or adults, to mathematically adjust medication doses in case of renal or hepatic impairment, and to interpret correctly standard abbreviations and symbols used in prescriptions and medication orders.

PHAR400 Medicinal Chemistry I (3 credits)

Medicinal Chemistry is divided into two courses: PHAR 400 & PHAR 450. Medicinal Chemistry I is the introductory course that helps the students to explore drug discovery and development. It employs basic principles of organic chemistry, biology, and biochemistry. It will familiarize the students with the discovery of the mechanism of action of drugs within organisms in order to design new and advanced pharmaceutical and medicinal agents. This interdisciplinary course will highlight the importance of knowledge obtained from toxicology, pharmacology, computer simulations, and clinical practice to provide valuable insights used in developing drugs with more targeted actions and fewer side effects.

PHAR407 Pharmaceutical Analysis & Biotechnology (2 credits)

The course introduces the fundamental principles of modern instrumental methods used in pharmaceutical analysis, including the theoretical background and calculations needed, with their applications for identifying, separating and quantifying drugs. Instrumentation discussed within this course fall into: Spectroscopic methods (UV-Visible, IR and Atomic Absorption), chromatographic methods (TLC, HPLC and GC), and electroanalytical methods. The course also provides students with knowledge about the analytical method validation parameters (precision, accuracy, linearity, limits of detection and quantitation, sensitivity and selectivity). The physicochemical properties of the analyte are presented with emphasis about the possibly interfering matrix components and control of the analytical errors.

PHAR407L Pharmaceutical/Biotechnology Lab (1 credit)

The course provides the students with practical experience of the instrumental methods used in pharmaceutical analysis; including UV-visible spectrophotometry, chromatographic methods (column, TLC and HPLC), polarimetric assays, conductometric titrations and enzymatic methods. The course presents the underlying principles guiding the instrument operation, instrument components, and the nature of the data generated by the instrument for each method discussed. Moreover, the course covers the basic principles in data analysis, error analysis and calibration.

PHAR410 Drug Dosage Forms I (3 credits)

This course introduces pharmacy students to the principles, practices, and technologies applied in the preparation of pharmaceutical dosage forms and drug delivery systems. It demonstrates the interrelationships between pharmaceutical and biopharmaceutical principles, product design, formulation, manufacture, compounding, and the clinical application of the various dosage forms in patient care. Regulations and standards governing the manufacturing and compounding of pharmaceuticals such as Good Manufacturing Practice (GMP) are also discussed in this course.

PHAR415 Professional Communications (1 credit)

This course is designed to teach strategies students can use to improve communication with patients and other health care providers. Students will attain the essential communication skills competency to approach patients and provide care. Students are engaged into different role plays that direct various conflicts that might arise in community settings with diverse patient population or health care professionals. In addition, students will learn and demonstrate the skills to promote and communicate health messages through pharmacy day projects. Students will also have the opportunity to work in a team while they are preparing for the pharmacy day/or awareness projects for the community.

PHAR420 Physical Pharmacy (3 credits)

This course explores the application of physical chemical principles in relation to pharmaceutical sciences. Physical and theoretical foundations are discussed and applied and problem solving is emphasized. This course helps pharmacy students in using foundational elements of mathematics, chemistry, and physics in their pharmacy-related work and study.

PHAR425 Pharmacognosy & Herbal Medicine (3 credits)

The course introduces students to natural products and other bioactive molecules from nature, their origin, identification, development, and usage. Furthermore, it identifies the chemical structure, classes and structure-activity relationships of natural products. Moreover, the course identifies the importance of natural products as major ingredients used within drug manufacturing.

PHAR435 Dermatology and Cosmetology (3 credits)

This course introduces pharmacy students to important aspects of dermatologic diseases, focusing on their common manifestations and the appropriate pharmacotherapy. The course addresses the assessment, treatment and referral of disorders affecting the skin, nail, hair or mucous membranes. Since pharmacists encounter several questions regarding general hygiene and cosmetic elegance, the second part of the course focuses on pharmaceutical cosmetology that provides basic and modern knowledge of optimal skin management and hair care.

PHAR450 Medicinal Chemistry II (3 credits)

Medicinal Chemistry is divided into two courses: Phar 400 and Phar 450. Medicinal Chemistry II helps the students to explore the principal classes of prescription drugs including neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents. It will familiarize the students with the indications of neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents, along with their related pharmacokinetics, pharmacodynamics and pharmacological profile.

PHAR456 Introduction to Pharmacy Practice & Simulation (3 credits)

This course provides students with an introduction to pharmacy practice and patient assessment skills necessary in patient-centered pharmacy practice through Simulation Based Education. The aim of this course is to prepare students to operate various pharmacy services during their actual practice. Course topics include basic physical assessment techniques, interpretation of findings from laboratory tests or physical examinations and documenting findings from patient assessments. Laboratory time will be used to practice various assessment skills. The course will also build on communication and information skills presented in previous courses.

PHAR460 Pharmacy Management & Drug Marketing (3 credits)

The aim of the course is to teach pharmacy students that superior patient care and good pharmacy business are not mutually exclusive and to familiarize the student with the management functions and resources common to all pharmacy practice settings including managing people, money, operations, traditional goods and services as well as managing risks and value-added services. Also, this course helps students to acquire leadership skills.

PHAR465 Interpretations of Lab Data (3 credits)

This course is an introduction to the fundamentals of interpreting laboratory test results that will illustrate how the results of a particular laboratory test should be interpreted, and allow students make accurate and critical diagnostic decisions. It provides pharmacy students with essential information on common laboratory tests used to screen for

or diagnose disease, monitor the effectiveness and safety of treatment, or assess disease severity. Each laboratory test is described in terms of its clinical uses and relation to the pathophysiology of the disease.

PHAR472 Drug Dosage Form II (3 credits)

This course is the second part of the drug dosage form courses that are designed to flow logically. This part will focus on the design, formulation, manufacture, and testing of suppository dosage forms and other complex or novel dosage forms and drugs that were not covered in Drug Dosage Form I.

PHAR472L Compounding Lab (1 credit)

This course is the practical part of the two series of dosage form courses that deal with different formulations and drug delivery systems focusing on the rational and the significance of each dosage form. The course will help the students to demonstrate the skills in preparing different dosage forms in the lab based on guidelines and pharmacopeias.

PHAR480 Pharmacy Practice Experience I (PPEI) (6 credits)

Pharmacy Practice Experience Course I is one of series of practice experience courses which introduces students to the philosophy and practice of pharmaceutical care, including patient counseling, monitoring plans, and patient outcomes, with emphasis on the role of the pharmacist as the primary manager of patient drug therapies. After the students finish their first and second professional years, they are required to actively participate in a twelve-week supervised experiential program in community pharmacy. Students are exposed to fundamental professional practice skills, have interactions with health care consumers and professionals, and become involved in the provision of pharmaceutical care.

PPEI is offered during the first professional year. The aim of these continuum PPE courses is to help students to acquire first the understanding of the fundamental health care needs of diverse population in basic and advanced community topics along with the professional responsibility to deliver those needs. Students attain their actual learning services at community settings where they will have opportunity to communicate and interact with diverse patient population.

PHAR505 Pharmacology I (4 credits)

This course introduces the underlying principles of pharmacology and provides an overview of the physiological, biochemical, and anatomical foundations for the interaction of drugs and chemicals with biological systems. The course includes a systematic study of the effects of drugs on different organ systems and disease processes, the mechanisms by which drugs produce their therapeutic and toxic effects, and the factors influencing their absorption, distribution and biological actions. Specific drugs and sites of drug action are further examined beginning with the peripheral, followed by the central nervous system, and drugs used to treat inflammation.

PHAR510 Biopharmaceutics & Pharmacokinetics (4 credits)

This course introduces the concepts of biopharmaceutics and pharmacokinetics. It highlights the process of absorption, distribution, metabolism, and excretion of drugs in order to improve the evaluation of drug delivery systems and the management of patients. It will help students to understand the clinical variability of drug response through exploring the relationships among physiological factors, compartmental models, pharmacokinetics and pharmacodynamics.

PHAR515 Pharmacotherapeutics I (Neurology/Psychiatry) (3 credits)

This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common neurologic and psychiatric disorders. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for psychiatric and neurologic diseases through highlighting on the monitoring parameters and important medications' adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.

PHAR520 Pharmacotherapeutics II (Pulmonary/Rheumatology) (3 credits)

This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common pulmonary, gastrointestinal, and rheumatological diseases. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for pulmonary, gastrointestinal, and rheumatological diseases through highlighting on the monitoring parameters and important

medications' adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.

PHAR530 Clinical Nutrition (3 credits)

This course presents the principles and practice of scientifically based clinical nutrition in pharmacy settings. It introduces the students to nutritional assessment in various medical conditions with emphasis on understanding that there are different expressions of imbalances and/or dysfunction that are preventable and correctable in many cases.

PHAR531 Introduction to Epidemiology and Biostatistics (3 credits)

This course is offered as an introduction to epidemiology and biostatistics for undergraduate pharmacy students and it consists of two modules. The first module is an introduction to epidemiology, which provides the basis of understanding of epidemiological aspects of the occurrence and distribution of diseases in human populations, predominantly focusing on basic epidemiological terminology, measures, and research methods. The second module is the basic biostatistics, which focuses on the methods of data collection, analysis and presentation of health-related data, mainly concentrating on odds ratios, confidence intervals, proportions, 2x2 tables, and hypothesis testing.

PHAR532 Special Topics: Geriatrics and Palliative Care (3 credits)

This course introduces the concept of optimizing medication use in the geriatric population and discusses palliative care along with highlighting the role of the pharmacist.

PHAR533 Special Topics: Ambulatory Care & First Aid (3 credits)

This course involves the evaluation of drug utilization, and synthesis of rational drug regimens in the context of ambulatory care. Moreover, it presents the basic medical emergencies that a pharmacist may encounter in daily life, and allows the student to properly evaluate the real status of the patient during an emergency, assess the risk, identify the urgency of a problem, and how to provide first medical aid.

PHAR534 Special Topics: Immunization & Vaccination (3 credits)

This course involves the evaluation of drug utilization, and synthesis of rational drug regimens in the context of immunization, along with a comprehensive overview of the complex and ever changing topic of vaccination for pharmacists.

PHAR540 Pharmacy Careers (3 credits)

This course is the bridge between the academic education and the professional working life. It aims to give the students the required communication and presentation skills, and the interview techniques to gain quickly an entry-level job in this highly demanding field. This course will introduce the students to the market place and identify the available outlets for fresh pharmacy graduates. In addition, it will familiarize the students with the required skills to help them in securing an early integration and adaptation into their new job.

PHAR541 Hospital Pharmacy (3 credits)

The course allows the student to recognize the pharmacist administrative and technical services in the hospital. It comprises different aspects of hospital administration, patient care activities and pharmacist technical services in the hospital, as well as hospital medication distribution systems.

PHAR555 Pharmacology II (4 credits)

This course focuses on the drug classes that cover cardiovascular, anti-diabetic, and chemotherapeutic agents. It includes a systematic study of the effects of drugs on different organ systems and disease processes, the mechanisms by which drugs produce their therapeutic and toxic effects, and the factors influencing their absorption, distribution and biological actions. Specific drugs and sites of drug actions are further examined beginning with cardiovascular drugs, followed by anti-diabetic agents, antifungal agents, antibiotics, and cancer chemotherapeutic agents.

PHAR560 Pharmacogenomics (3 credits)

This course introduces basic molecular genetics to the students and how genetics could be used to explain the possible variability in drug response. It familiarizes the students with the pharmacogenetics of drug transport and metabolism, with their relevance to clinical practice and individualization of drug therapy, along with updates on candidate pharmacogenomic testing. The course also explores the current and promising future applications of pharmacogenomics in areas of oncology, hematology, cardiovascular and neurological diseases, organ transplantation, and others. Key principles and applications of gene therapy will be reviewed. The course will help the students to interpret the results of pharmacogenomic association studies in order to comprehend variability in drug response and toxicity based on genetic polymorphism.

PHAR565 Pharmacotherapeutics III (Cardiology/Nephrology) (3 credits)

This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common cardiovascular and renal disorders. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for cardiovascular and renal disorders through highlighting on the monitoring parameters and important medications' adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.

PHAR570 Pharmacotherapeutics IV (Endocrinology/Dermatology) (3 credits)

This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common endocrinologic and women's health related disorders. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for endocrinologic and women's health related disorders through highlighting on the monitoring parameters and important medications' adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.

PHAR580 Pharmacy Practice Experience II (PPE II) (6 credits)

Pharmacy Practice Experience Course II is one of series of practice experience courses which introduces students to the philosophy and practice of pharmaceutical care, including patient counseling, monitoring plans, and patient outcomes, with emphasis on the role of the pharmacist as the primary manager of patient drug therapies. After the students finish their first and second professional years, they are required to actively participate in a twelve-week supervised experiential program in community pharmacy. Students are exposed to fundamental professional practice skills, have interactions with health care consumers and professionals, and become involved in the provision of pharmaceutical care.

The scope and complexity for PPE II increase as students advance in these courses. PPEII is offered during the second professional year. The aim of these continuum PPE courses is to help students to acquire first the understanding of the fundamental health care needs of diverse population in basic and advanced community topics along with the professional responsibility to deliver those needs. In PPEII, students attain their actual learning services at community settings where they will have opportunity to communicate and interact with diverse patient population.

PHAR585 Pharmacy Seminar (2 credits)

The course is intended to improve and broaden the pharmacy students' knowledge as well as their communication skills through performing thorough research on relevant topics that represent a challenge in the medical field. In addition, this course will enable students to acquire skills in biomedical literature evaluation in which they are asked to search and conduct an evaluation for a primary literature. The early exposure of students to journal clubs during their pharmacy education is a scholastic tool that can improve students' ability to interpret up-to-date clinical evidence and apply it to practice.

PHAR590 Industrial Pharmacy (3 credits)

This course addresses scientific knowledge of regulatory aspects of pharmaceutical industry with various guidelines, and quality systems. It familiarizes the student with manufacturing of various pharmaceutical dosage forms along with patent knowledge, material management, and various analytical techniques required to evaluate dosage forms.

PHAR591 Instrumental Analysis (3 credits)

This course addresses the theory and practice of instrumental methods for the separation, identification and quantitative analysis of chemical substances.

PHAR592 Special Techniques in Antimicrobial Resistance (3 credits)

This course describes some of the common techniques and molecular methods currently used for the detection of antimicrobial resistance.

PHAR606 Non-Prescription Drugs (3 credits)

This course develops pharmacy students' knowledge and problem-solving skills needed to assess patient's health status and practice self-treatment. Also, it introduces them to nonprescription medications approved by FDA along with nonpharmacological measures recommended to treat certain conditions. It highlights on conditions where self-treatment cannot be applied and referral to a primary care provider is needed. To add, it trains them on the proper selection of nonprescription medications and the use of certain devices. It also focuses on patient education and counseling regarding self-treatment and health related issues.

PHAR610 Toxicology (3 credits)

This course presents the basic principles of toxicology including areas of toxicology, factors affecting toxicity in humans and disposition of toxins in human body. The course also provides students with knowledge about diagnostic measures and clinical management (i.e. stabilization of vital function and specific antidotal measures) of poisonings. Poisoning with common groups of chemicals (pesticides, metals, solvents and common drugs) will be presented including, mechanism of toxicity, sources of exposure, major clinical manifestation and methods of treatment.

PHAR615 Pharmacotherapeutics V (infectious Diseases) (3 credits)

The traditional practice of pharmacy has evolved over the past three decades from a practice primarily focusing on the preparation of medications to a practice primarily emphasizing on rational pharmacotherapeutics. The need for selecting the most appropriate medication, regimen, and dose while minimizing problems such as drug interactions, adverse drug reactions, and IV incompatibilities has become central to this new patient focused approach. Endemic and epidemic infectious diseases present a challenging field to pharmacists and other healthcare professionals. Infections caused by different pathogens in different areas of the body can lead to complications if left untreated. Pharmacists have an important role in this field to rationalize treatment, prevent the emergence of antibiotics resistance, and minimize cost.

PHAR620 Pharmacotherapeutics VI (Hematology/Oncology) (3 credits)

This course enables the students to develop knowledge regarding the pathophysiology of the most common cancer diseases, risk factors, prevention, and treatment approaches based on updated guidelines. Through this course students will develop their knowledge and clinical skills in preventing adverse reactions related to the diseases or related treatment. In addition, students will be able to explore detailed information regarding the most updated treatment for the most common types of solid and liquid tumors.

PHAR625 Pharmacoeconomics (3 credits)

This course presents an overview of the concept of pharmacoeconomics, and related models including cost-minimization analysis, cost effectiveness analysis, cost utility analysis, cost benefit analysis, and cost of illness evaluation. The course provides students with knowledge on different types of costs and benefits and identifies formulary decisions that are deemed necessary to regulate the pharmaceutical market. It will enable the students to utilize the Markov Modeling and discount rates, appraise pharmacoeconomic literature, and conduct a decision analysis plan.

PHAR635 Parenteral Dosage Forms (2 credits)

This course introduces the students to all aspects of parenteral products, and demonstrates the relevance between drug delivery optimization and therapeutic outcomes. It also describes the pharmacy environment appropriate for parenteral products preparation and sterile compounding as defined by USP Chapter <797>. Through this course, students will be able also to demonstrate skills related to parenteral preparations.

PHAR650 Pharmacy Dispensing Practice (2 credits)

The pharmacy dispensing practice course is a highly interactive laboratory session inside a virtual pharmacy (simulation setting). This simulation lab aims to heighten students' knowledge about medications and patient education, and develop their communication skills. The student will learn to dispense over the counter (OTC) and prescription medications accurately and safely, counsel patients efficiently and properly, manage effectively any conflict that might arise between the pharmacist and the patient or between the pharmacist and other health care professionals (physicians, pharmacist) and acquire leadership skills.

PHAR656 Pharmacy Law (1 credit)

This portion of the Law and Ethics in Pharmacy Practice focuses on pharmacy law. The course will cover the Lebanese pharmacy rules and regulations that impact and regulate the practice of pharmacy. Topics including the regulation of medications, regulation of controlled substances, and the rules concerning pharmacy practice on the Lebanese territories will be extensively covered.

PHAR660 Pharmacy Practice Experience III (PPE III) (6 credits)

Pharmacy Practice Experience III and IV (PPE III/IV) are series of fifteen weeks designed to provide students the opportunity to further develop their skills and knowledge base in pharmacy practice. The internship is fifteen weeks in length, three weeks of which each student will be under the direct supervision of the onsite hospital pharmacist and assigned faculty member preceptor. The student's major tasks will be accomplished within the hospital pharmacy premises. The remaining twelve weeks are referred to as the Clinical Care Rotation, during which the intern will be assigned to a medical team in different wards. The intern will be on the floors with the health care professionals, by patient bedside and consulting charts under the supervision of onsite pharmacist and assigned

faculty member. Each student will complete three major rotations and one elective rotation. The length of each rotation is three weeks. Students will have also the opportunity to rotate in a tertiary hospital.

PHAR665 Pharmacy Practice Experience IV (PPE IV) (6 credits)

Pharmacy Practice Experience III and IV (PPE III/IV) are series of fifteen weeks designed to provide students the opportunity to further develop their skills and knowledge base in pharmacy practice. The internship is fifteen weeks in length, three weeks of which each student will be under the direct supervision of the onsite hospital pharmacist and assigned faculty member preceptor. The student's major tasks will be accomplished within the hospital pharmacy premises. The remaining twelve weeks are referred to as the Clinical Care Rotation, during which the intern will be assigned to a medical team in different wards. The intern will be on the floors with the health care professionals, by patient bedside and consulting charts under the supervision of onsite pharmacist and assigned faculty member. Each student will complete three major rotations and one elective rotation. The length of each rotation is three weeks. Students will have also the opportunity to rotate in a tertiary hospital.

PHAR710 Advanced Pharmacy Practice Experience (Community) (2 credits)

This course provides students with knowledge, clinical skills and competencies in the pharmaceutical care on wide variety of acute and chronic community settings. Students will overview updated practice clinical guidelines and literature. They will also develop clinical skills in order to individualize patient therapy and optimize treatment outcomes; as well as to provide effective patient education and counseling, and effective communication skills with other healthcare professionals. The course will allow students to assess patient subjective and objective data, formulate pharmaco-therapeutic plan, evaluate the effectiveness of treatment, and determine dosage adjustment or alternative therapy. Daily activities include evaluating patient information, discussing cases and interventions with the preceptor, participating in seminars and other health care activities, preparing medical talks and presentations for the health care team, and conducting patient counseling sessions.

PHAR711 Advanced Pharmacy Practice Experience (IM) (4 credits)

This course provides students with knowledge, clinical skills and competencies in the pharmaceutical care on wide variety of acute and chronic internal medicine settings. Students will overview updated practice clinical guidelines and literature. They will also develop clinical skills in order to individualize patient therapy and optimize treatment outcomes; as well as to provide effective patient education and counseling, and effective communication skills with other healthcare professionals. The course will allow students to assess patient subjective and objective data, formulate pharmaco-therapeutic plan, evaluate the effectiveness of treatment, and determine dosage adjustment or alternative therapy. Daily activities include attending rounds, evaluating patient information from medical charts, discussing cases and interventions with the preceptor, participating in seminars and other health care activities, preparing medical talks and presentations for the health care team, and conducting patient counseling sessions.

PHAR712 Advanced Pharmacy Practice Experience (CCU) (4 credits)

This course provides students with knowledge, clinical skills and competencies in the pharmaceutical care on wide variety of acute and chronic cardiac care settings. Students will overview updated practice clinical guidelines and literature. They will also develop clinical skills in order to individualize patient therapy and optimize treatment outcomes; as well as to provide effective patient education and counseling, and effective communication skills with other healthcare professionals. The course will allow students to assess patient subjective and objective data, formulate pharmaco-therapeutic plan, evaluate the effectiveness of treatment, and determine dosage adjustment or alternative therapy. Daily activities include attending rounds, evaluating patient information from medical charts, discussing cases and interventions with the preceptor, participating in seminars and other health care activities, preparing medical talks and presentations for the health care team, and conducting patient counseling sessions.

PHAR713 Advanced Clinical Pharmacokinetics (2 credits)

This course accompanies the progression and development of advanced pharmacy practice experiences for both clinical pharmacology and pharmaco-therapeutics. It emphasizes on adjusting dosage regimen and patient monitoring with respect to plasma drug levels, efficacy, adverse events, drug interactions, and disease and population interactions. The course sequence is designed to provide the student with exposure to the application of pharmacokinetics and pharmacodynamics principles as they apply to specific drug classes in various clinical situations. Each chapter will point out the use of mathematical principles to predict drug disposition in individual patients. Moreover, it will underline the relationship between the clinical effects, adverse effects, as well as the time-concentration-effect relationships.

PHAR715 PharmD Project Part I (3 credits)

This course integrates students into the epidemiological and clinical research fields, particularly into ways or methodologies of conducting a research study. It allows them to plan, organize and conduct a research study through

practical examples. Students will learn how to plan a study, write a research protocol, and avoid biases in an epidemiological study, as well as about sampling methods and data collection techniques.

PHAR760 Advanced Pharmacy Practice Experience (ICU) (4 credits)

This course provides students with knowledge, clinical skills and competencies in the pharmaceutical care on wide variety of acute and chronic intensive care settings. Students will overview updated practice clinical guidelines and literature. They will also develop clinical skills in order to individualize patient therapy and optimize treatment outcomes; as well as to provide effective patient education and counseling, and effective communication skills with other healthcare professionals. The course will allow students to assess patient subjective and objective data, formulate pharmaco-therapeutic plan, evaluate the effectiveness of treatment, and determine dosage adjustment or alternative therapy. Daily activities include attending rounds, evaluating patient information from medical charts, discussing cases and interventions with the preceptor, participating in seminars and other health care activities, preparing medical talks and presentations for the health care team, and conducting patient counseling sessions.

PHAR761 Advanced Pharmacy Practice Experience (Elective I) (2 credits)

This course provides students with knowledge, clinical skills and competencies in the pharmaceutical care on wide variety of acute and chronic settings including infectious diseases, psychiatry, geriatrics, emergency department, gastroenterology and others. Students will overview updated practice clinical guidelines and literature. They will also develop clinical skills in order to individualize patient therapy and optimize treatment outcomes; as well as to provide effective patient education and counseling, and effective communication skills with other healthcare professionals. The course will allow students to assess patient subjective and objective data, formulate pharmaco-therapeutic plan, evaluate the effectiveness of treatment, and determine dosage adjustment or alternative therapy. Daily activities include attending rounds, evaluating patient information from medical charts, discussing cases and interventions with the preceptor, participating in seminars and other health care activities, preparing medical talks and presentations for the health care team, and conducting patient counseling sessions.

PHAR762 Advanced Pharmacy Practice Experience (Pediatrics) (4 credits)

This course provides students with knowledge, clinical skills and competencies in the pharmaceutical care on wide variety of acute and chronic pediatric settings. Students will overview updated practice clinical guidelines and literature. They will also develop clinical skills in order to individualize patient therapy and optimize treatment outcomes; as well as to provide effective patient education and counseling, and effective communication skills with other healthcare professionals. The course will allow students to assess patient subjective and objective data, formulate pharmaco-therapeutic plan, evaluate the effectiveness of treatment, and determine dosage adjustment or alternative therapy. Daily activities include attending rounds, evaluating patient information from medical charts, discussing cases and interventions with the preceptor, participating in seminars and other health care activities, preparing medical talks and presentations for the health care team, and conducting patient counseling sessions.

PHAR763 Advanced Pharmacy Practice Experience (Elective II) (2 credits)

This course provides students with knowledge, clinical skills and competencies in the pharmaceutical care on wide variety of acute and chronic settings including oncology, hematology, nephrology, endocrinology, dermatology and others. Students will overview updated practice clinical guidelines and literature. They will also develop clinical skills in order to individualize patient therapy and optimize treatment outcomes; as well as to provide effective patient education and counseling, and effective communication skills with other healthcare professionals. The course will allow students to assess patient subjective and objective data, formulate pharmaco-therapeutic plan, evaluate the effectiveness of treatment, and determine dosage adjustment or alternative therapy. Daily activities include attending rounds, evaluating patient information from medical charts, discussing cases and interventions with the preceptor, participating in seminars and other health care activities, preparing medical talks and presentations for the health care team, and conducting patient counseling sessions.

PHAR765 PharmD Project Part II (3 credits)

This course integrates students into descriptive and inferential biostatistics, particularly into data management and analysis on SPSS. Students will learn how to enter, manage and analyze data on SPSS, as well as how to read and interpret results.